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**Proceedings of Fourth Physical
Education, Physical Activity and
Youth Sport Forum
(PE PAYS)**

***Promoting Physical Education
Across Schools and Communities***

**University of Limerick
June 2009**

MacPhail, A. & Young, A. (Eds)

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Preface

The Physical Education, Physical Activity and Youth Sport (PE-PAYS) Research Centre was formally launched in October of 2005 at the University of Limerick. In collaboration with researchers at the University of Limerick and others from around the country, the PE-PAYS mission was established with the intent of advancing the physical and social wellbeing of Irish children and youth through the creation and dissemination of knowledge on physical education, physical activity, and youth sport that informs both policy and practice. A multidisciplinary approach to research on children and young peoples' engagement in physically active lifestyles is central to this work as PE-PAYS researchers strive to help understand and solve challenges that inhibit this engagement. The development and dissemination of evidenced based best practice of teacher and coach education, in-school, after-school, and community projects focused on increasing young people's activity levels and healthy lifestyle choices are key foci of this research effort.

The fourth PE-PAYS Research Forum, *Promoting Physical Education Across Schools and Communities* was held on the 11th and 12th June 2009 at the University of Limerick. The forum included well established opportunities to engage with oral research presentations, physical activity workshops, poster presentations and round tables. The papers presented in this year's proceedings revolve around Contemporary Issues in Physical Education and Physical Activity Teacher Education and Teacher Development in Physical Education. The forum followed on from a one-day British Educational Research Association Physical Education Special Interest Group Seminar, held during the day on the 11th, with a focus on research on professional practice and inter-professional education through communities of practice.

This is the third year that those who presented oral and poster presentations were invited to contribute their forum papers to the proceedings. Those included here are from those who agreed to re-work their presentations for sharing with a wider audience. We would like to thank those who have contributed their work to this publication and to the reviewers for their useful comments in enhancing the papers. We would like to thank the Irish Sports Council for their continued encouragement and support that enabled publication of the research proceedings from the 2009 PE-PAYS Research Forum.

Details of all projects and ongoing events of the PE-PAYS Research Centre can be found on the web site www.ul.ie/pepays/ and the proceedings from the 2007, 2008 and 2009 PE-PAYS Research Forum can be accessed on the Irish Sports Council web site www.irishsportscouncil.ie/

Ann MacPhail & Ann-Marie Young
Editors of the 2009 PE-PAYS Proceedings

Welcome from the Irish Sports Council

On behalf of the Irish Sports Council I am delighted to welcome the publication of the proceedings of the Fourth annual forum of Physical Education, Physical Activity and Youth Sport (PEPAYS) held in the University of Limerick in June 2009.

PEPAYS was launched with a very specific objective in mind, namely to advance the physical activity agenda for young people through a collaborative research process across the various strands that underscored its name. What has been clear from each successive forum is how well the promoters of PEPAYS have achieved their objective. In advertising parlance PEPAYS does exactly what it says on the tin.

As the head of research in the Irish Sports Council I have been involved with the PEPAYS forum since 2007. I recognise how much the forum has grown in that short intervening space of time. It is now firmly established on the annual calendar as an ideal opportunity for researchers and policy makers to exchange views and hear about some of the latest developments in research on sport, physical education and physical activity. The forum has succeeded in attracting leading researchers from a variety of institutions and backgrounds and reflects well on all involved.

It is imperative that the Council, and other Departments and agencies involved in the “physical activity” space, support initiatives like PEPAYS as we try to increase our understanding of the complex issues affecting participation in sport and physical activity throughout the life course. It is a significant public policy issue.

I have worked with many of the researchers represented in these proceedings and I am well aware of the quality of the work reported. I would like to acknowledge all of the researchers in this regard. I would exhort them to continue their efforts in seeking a better understanding of these important issues and assure them of my support.

The Council has made a long-term strategic commitment to increase participation in sport and physical activity throughout the Irish population. I am only too well aware of how difficult a challenge this will be. But I know for certain that, to be successful, our efforts must be underpinned by certain characteristics including a strong knowledge base and a commitment to monitoring, evaluation and research. The PEPAYS forum and these proceedings add to our understanding and will hopefully help us improve our efforts. .

Finally, I pay particular tribute to the PEPAYS promoters, Mary O’Sullivan, Ann MacPhail and Deborah Tannehill and colleagues in the University of Limerick for their work in developing the forum initially and for their dedication in enhancing its value in each successive year. As a fellow believer in the merits of a collaborative approach to underscore all of our respective efforts I wish you every success with PEPAYS in the future.

Peter Smyth
Director of Research
Irish Sports Council

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STEP COUNT OF IRISH PRIMARY SCHOOL CHILDREN

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KEY WORDS: Pedometer, BMI, Children

INTRODUCTION:

The occurrence of overweight and obesity in both adults and children has increased over the past two decades (Baranowski et al., 2000; Cavill et al., 2001; Moore et al., 2003; Van Beurden et al., 2003), and is described by the World Health Organisation as a global epidemic (Puska et al., 2003). Physical activity is widely recognised as key to effective management of overweight and obesity problems (Strong et al. 2005; Department of Health and Children, 2005), and indeed for children it is seen as an important factor in reducing the risk of chronic disease in adulthood (Cavill et al., 2001; Logstrup, 2001; CDC, 2006). The current recommendation in Ireland for young people (5-18 years) is that they should participate in physical activity of moderate intensity for at least one hour each day (Department of Health and Children, 2009).

Pedometers offer a practical and affordable objective method of assessing physical activity levels in varying populations. Although pedometers are not able to discriminate between intensities of physical activity, they do provide a simple means of tracking daily PA expressed as a summary output of steps/day (Tudor-Locke et al., 2008). A recent increase in the use of pedometers as a measure of assessing physical activity in children has prompted many studies to examine the relationship between BMI and step count. In order to achieve health benefits from physical activity, Tudor-Locke and colleagues (2004) established that the average age and sex specific pedometer cut points should be 12,000 steps/day for girls and 15,000 steps/day for boys. These criterion-referenced cut points were derived as optimal cut points separating normal-weight and overweight/obese students (aged 6 – 12 yrs). Children averaging fewer steps than the cut-off point per day are deemed more likely to be labelled as overweight or obese.

BACKGROUND:

A larger study (Belton et al., 2010) was carried out to 1) assess pedometer levels and BMI of 6 – 9 year old Irish children and, 2) to evaluate the utility of pedometer based physical activity recommendations for health in predicting BMI. As part of this larger study data was also collected via self report to give some information on the type of activity children chose to participate in during school break times and immediately after school. This focus of this paper is the investigation of the link between activity choice and pedometer step count.

PURPOSE/RELATED RESEARCH QUESTIONS:

The aims of this paper are i) to provide information on the number of Irish school children, aged 6 – 9 years, meeting the Tudor-Locke et al. (2004) pedometer cut points, ii) to examine any differences in step count across weekday and weekend day, and in the during school and after school periods, and iii) to explore any relationship between step-count and children's self-reported physical activity patterns during and immediately after school.

METHODOLOGY:

Participants

Three hundred and one children (N=301), from four schools (representing urban, suburban and rural) across the greater Dublin area volunteered for participation in this study. Fifty one percent of participants were boys (N=153). Participants were aged between 6 and 9 years ($7.8 \pm .58$). Informed consent for participation was sought and granted by each child and their parent/guardian; all children were free to withdraw from participation in the research at any stage. Full approval for this study was given by the institutional research ethics committee.

Procedures

Physical activity was assessed using a Yamax Digiwalker SW200 pedometer worn over 7 days. Children were asked to wear the pedometer during all waking hours unless showering, swimming or taking part in an activity for which an adult deemed it unsafe to wear. The child's parent/guardian and class teacher were given a recording sheet on which to record the step counts of each child at predetermined time periods. In addition all children completed a self reported 'Attitude towards physical activity questionnaire' (adapted from Pieron et al., 1996) containing questions on the type of activity (sedentary, moderately active, vigorously active) they choose to participate in during school break times and immediately after school.

Statistical Analysis

Self-report data were analysed descriptively to determine children's preferred type of activity during and immediately after school (active or inactive). The first days pedometer monitoring was omitted from analysis to allow for differing administration times, and any reactivity to wearing the pedometer (Rowe, 2004). Average pedometer counts were calculated from the data for the following time periods – i) Overall week: average step count for at least 3 week day's data plus one weekend day's data.; ii) Weekday: average step count for at least three week days data; iii) Weekend: average step count for Saturday or Sunday data, or average step count for Saturday and Sunday; iv) During school: average step count for at least three weekdays during school hours; v) After school: average step count for at least three weekdays excluding school hours. Paired samples t tests were used to compare the weekday average with the weekend average, and the during school average with the after school average. Independent samples t tests were used to compare average steps taken in the various time periods for children grouped by choice of activity (active or sedentary) i) during school break and ii) immediately after school. The alpha level for analysis was set at $p < 0.05$.

FINDINGS:

The mean (SD) for children's anthropometric characteristics and average step counts in each of the time periods are shown in Table 1 (Belton et al., 2010). 68.5% achieved the age and sex specific BMI referenced pedometer cut off points derived by Tudor-Locker et al. (2004), 31.5% did not (n = 181).

Table 1: The anthropometric characteristics and mean (SD) values for step counts

gender	Overall week (n = 91)	Weekday (n = 132)	Weekend (n = 116)	During School (n = 141)	After School (n = 130)
Girl (n = 148)	14,710 (4276)	10,434 (3268)	32,768 (15762)	3,665 (1077)	6,756 (2903)
Boy (n = 153)	16821 (5575)	11463 (3129)	37009 (17663)	4223 (1156)	7229 (3123)

Results of paired samples t-tests showed that children take significantly more steps on weekends than on weekdays, and after school than during school. Independent sample t-tests showed that children who indicated a preference for physically active activities at school break time were significantly more likely to have a higher overall average daily step count ($p = 0.006$). Children that chose physically active activities immediately after school had a significantly higher step count in the weekday ($p = 0.029$), and the after school ($p = 0.015$) periods, but not in the overall average daily step count.

DISCUSSION:

Results indicate that the majority of participants in this study (68.5%) met the Tudor-Locke et al. (2004) cut off points. In addition children were found to be more active on weekends than on weekdays. These findings are in contrast to that of Duncan et al. (2007) who found that in a sample of 8 – 11 year old children in the UK only 28.7% of boys and 46.7% of girls met these cut off points. It was also found that children were significantly more active on weekdays than on weekends. This disparity in findings adds to the growing body of literature on either side of the weekday versus weekend physical activity debate (Duncan et al., 2007).

The high average daily step counts, and large percentage of children meeting the Tudor-Locke et al. (2004) cut off points in this study are encouraging but it must be noted that they are in contrast to the findings of similar studies in other countries including England (Duncan et al., 2007), and the United States (Laurson et al., 2008). This variation in step count across countries does not appear to be unusual as documented by Vincent et al. (2003). The averages detailed in the current study are most consistent with those reported in a cohort of Swedish children aged 6 – 12 years (Vincent et al., 2003), and of Cypriot children aged 11-12 years (Loucaides et al., 2003).

The findings in the current study in relation to during school and after school activity are consistent with those of Loucaides et al. (2003), where it was reported that the cohort of Cypriot children accumulated significantly more mean steps after school than during school. The study carried out by Cox et al. (2006) also reflects this finding to a lesser extent, it was reported that while overall the sample took approximately half of their steps in the during school period, the most active third of their sample took significantly more steps outside of school than the least active group. Interestingly however the during and after school average step counts for both males and females were considerably lower in the current study than those reported in the Loucaides et al. and the Cox et al. research.

Findings in relation to choice of activity (active or inactive) during and after school go further to help understand the activity levels of children. Although it is clear that children accumulate more steps after school than during school, the significant link between children's choice of physically active activities during school break times and higher overall average daily step counts cannot be ignored. Although opportunities for activity during school are limited (Cox et al., 2006) this finding indicates that efforts to encourage children to be more active when these opportunities arise may result in higher overall average daily step counts. Similarly results support efforts to encourage children to be involved in physical activities immediately after school, rather than the perhaps more traditional route of 'homework first then activity', showing that this may result in higher average weekday step counts. It is interesting to note however that a significant link was not found between choice of active activity after school and overall average daily step count, indicating that perhaps those children that are less active after school are perhaps making up for this at the weekend; further investigation is needed to clarify this point.

IMPLICATIONS AND RECOMMENDATIONS:

Findings of this study add to the growing body of literature on step counts and physical activity patterns of children. The majority of children (69%) met the age and sex specific pedometer cut off recommendations for health as defined by Tudor-Locke et al. (2004). Although this is quite positive in terms of international comparisons, concern is warranted for those children not meeting the pedometer or BMI cut points. Findings support the need for specific interventions targeting children's during school and after school activity participation in an effort to improve these figures.

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CURRICULUM PROFILES: AN ASSESSMENT TOOL FOR PHYSICAL EDUCATION?

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KEYWORDS: Assessment, Curriculum Profile, Physical Education

INTRODUCTION:

In 2007, the National Council for Curriculum and Assessment's (NCCA) publication *Assessment in the Primary School Curriculum: Guidelines for Schools* was disseminated to every teacher in the country. The practice of assessment in physical education is guided by three assessment tools, teacher observation, teacher designed tasks and curriculum profiles in the Primary Physical Education Curriculum (DES, 1999a). However use of curriculum profiles as a tool is not being availed of in the classroom due largely in part to the failure of the Department of Education and Science to provide them. Profiles for all subject areas remain non-existent except for the Drumcondra English Profiles (Murphy & Sheil, 2000). The aim of these profiles was to provide teachers with an assessment tool that would assist them in making judgements about their pupils' achievement of key curriculum outcomes in English. The curriculum profiles consist of a set of indicators based on content objectives in the curriculum. Increasingly teachers are recognising that good assessment practice in physical education can improve pupil's motivation and engagement with learning. However teachers are constantly searching for tools which will help them achieve this complex task.

BACKGROUND:

Changes in the skills and knowledge needed for success, in our understanding of how students learn, and in the relationship between assessment and instruction are changing our learning goals for students and schools. Everybody involved in education has a view on what assessment is, its role and purpose and although these views may differ one thing we are all agreed on is that assessment is becoming a permanent feature in teaching and learning.

In 1998, Black and William's internationally renowned *Inside the Black Box: Raising Standards through Classroom Assessment* progressed the assessment debate into realms that served to challenge the previously negative and testing-driven view of assessment. This article highlighted the value of formative assessment as an essential component of classroom work and that its development can raise standards of achievement. The formative aspect of this assessment is also reflected as a central principle of the Primary School Curriculum (DES, 1999) and seen as an integral part of teaching and learning. Assessment for Learning (AfL) acknowledges that assessment should be part of the teaching and learning process, with information gained from ongoing assessment informing and shaping the process. The NCCA (2007) notes the emphasis placed on the child's active role in their own learning throughout the 'assessment for learning' process.

The Learning and Teaching Scotland Service (2009) describe 'assessment for learning' as encapsulation of an environment where learners:

- understand clearly what they are trying to learn, and what is expected of them
- are given feedback about the quality of their work and what they can do to make it better
- are given advice about how to go about making improvements
- are fully involved in deciding what needs to be done next and who can give them the help if they need it

Endeavouring to ensure that children understand clearly what they are trying to learn and what is expected of them is comparable to Norton's understanding of constructive alignment, where 'the aims match the learning outcomes and assessment task and assessment criteria match the learning outcomes' (Norton, 2004). Constructive alignment and the provision of learning intentions will help ensure that teaching is effective in achieving its aims of actively engaging students in learning. Designing a curriculum profile would allow for constructive alignment as the profile would identify the learning indicators or outcomes as well as identifying the pupil tasks and success criterion based on the Physical Education Curriculum (DES, 1999a) objectives.

PURPOSE/RELATED RESEARCH QUESTIONS:

This study investigated and evaluated the design and use of an Athletics curriculum profile for 5th/6th class as an assessment tool in primary physical education. The study set out to examine:

- a teacher's attitude to, and current practice of, assessment in PE
- their experience of using a curriculum profile during a unit of work in athletics
- the children's ability to contribute to this assessment with the use of a self-assessment technique.

METHODOLOGY:

Research Design

A qualitative case study approach was employed. The research was divided into two phases. The initial phase established the current practices and perspectives of the participant teacher in relation to physical education and assessment in physical education, through an informal meeting. This data and the Physical Education Curriculum (DES, 1999a) informed the design of the curriculum profile (see Figure 1). It was decided that the specific learning outcomes would inform the assessment criteria for each lesson and a challenge task for each was set to afford children the opportunity to work towards a goal, encompassing all aspects of the lessons, by the end of the 6 week unit of work. Field notes were kept throughout the planning and design process.

Curriculum Profile – Athletics – 5 th and 6 th class
<ul style="list-style-type: none"> • Display an ability to partake in a variety of running events <i>Jog/run in a non-competitive setting for periods extending from 30 seconds to 5 min</i> <i>Sprint distances of 50-70m, developing good acceleration and finishing technique</i> <i>Participate in team relays in small groups</i> • Jump for distance and height <i>Practise the technique of hurdling</i> <i>Practise the standing jump for distance</i>

<ul style="list-style-type: none"> • Throw for distance <p><i>Develop the javelin throw, inclusive of a short approach run</i> <i>Develop the shot put and discus throw from a standing position</i></p> <ul style="list-style-type: none"> • Demonstrate an understanding and appreciation of athletics <p><i>Develop an understanding of speed, strength, control and co-ordination</i> <i>Describe and discuss movement</i> <i>Develop an understanding of the rules of athletics and apply them in suitable situations</i> <i>Measure an achievement</i> <i>Become aware of athletic events and athletes locally, nationally and internationally</i></p>
<p style="text-align: center;">Challenge Task</p> <p>Children will organise and participate in a station teaching lesson. They will include activities that will cover running (continuous, sprinting, relays and hurdling), jumping (height and distance) and throwing skills.</p>

Figure 1. Curriculum Profile

The second phase involved the implementation of the unit of work and its evaluation. Specific learning outcomes for each lesson were presented to the children in the classroom prior to the practical athletics activities. Consequent discussion regarding these outcomes provided the children with a clear focus on the specific learning outcomes that would be achieved during the lesson. This approach highlighted the assessment for learning approach. An assessment wheel, ([JCPE, 2006](#)) was modified for use by the children after week 2, 4 and 5 of the unit of work in athletics. This assessment wheel encouraged the children to become active agents in their own learning by performing a self-assessment of their progression and development in relation to the overall challenge task. The teacher kept a reflective journal throughout the implementation of the unit of work and on its completion a semi structured interview was carried out. This interview was carried out to attempt to ascertain the level of impact and effectiveness of curriculum profiles on the teaching and learning of PE following a unit of work in Athletics. The following themes informed the interview schedule:

- Planning and organisation prior to intervention
- Planning for athletics unit of work
- Unit of work (teaching and delivery)
- Assessment wheel
- Unit of work (assessment)
- Future of assessment in physical education

Participants

One teacher and pupils (N=26) from a multi-grade class (fifth and sixth) in a small co-educational, rural school participated in the study. The class teacher, with over twenty years teaching experience, chosen to participate in this case study is a driven individual, highly professional in all aspects of his teaching and acutely aware of the recent change in emphasis from the more traditional summative approach of assessment to the newer, more encompassing idea of formative assessment or ‘assessment for learning’.

Data Analysis

Data analysis was an ongoing process involving continual reflection of the data throughout the study. Using the constant comparative method of data analysis (Denscombe, 2005), the transcribed interviews, field notes, children's assessments and reflective journal entries were carefully read and coded. The coding process resulted in the use of a combination of predetermined and emerging categories. The use of predetermined categories reflected the interview schedule. Categories such as planning, teaching and delivery, assessment wheel, future of assessment were identified. Categories also emerged from the data as it was reread and analysed after the intervention and interview. From these categories a number of overarching themes were developed for discussion, as follows:

- Planning
- Implementation
- Recording of assessment

FINDINGS AND DISCUSSION:

Following detailed analysis of the data a number of findings emerged during the discussion of this research. The impact of planning, implementing and recording assessment during a unit of work in athletics was presented from the perspective of the class teacher for the purposes of this case study.

Planning: Given the limited amount of guidance on assessment in the PE Curriculum (DES, 1999) and Teacher Guidelines (DES, 1999a) it was of little surprise that this class teacher's knowledge of assessment in general in PE prior to this study was described as "*limited*". The main assessment tool used by this teacher prior to this case study was teacher observation. The use of specific learning outcomes did not form part of this teacher's planning, he would have worked towards goals for each lesson but openly admits that only in some strand areas, primarily games, did he know exactly the "*goals we were aiming for...*" and had the ability to ascertain "*at the end of the class, did we achieve our goals*". Involving children in the assessment process was not a priority. Children would have been "*asked at the end, when we had shown them the drill or whatever, did they feel they had achieved. Then when it came to the practice games I would have stopped them during it if they were not performing*".

The use of the curriculum profile was welcomed by the teacher. He was enthused by the format of the lessons and the assessment tools that were incorporated into the unit of work: "*What we wanted to achieve was well laid out and once the notes were there it was easy enough to follow – the unit of work was there in front of me, the outcomes were there, we knew what we wanted to try and achieve and from that point of view it was well structured*".

Robinson (1996) asserted that "assessment should be an inseparable part of curriculum planning and delivery". The class teacher responded favourably when asked to discuss the impact the PowerPoint presentation on the children prior to each lesson. Informing the children of "*what we wanted them to try and achieve, rather than showing, taking them through it and then at the end asking them well did they achieve it we would tell them at the start we want to try and achieve a certain outcome and by using that the focus of the child actually centred a bit more – there was a stronger focus for the child to achieve the set goal.*"

Implementation: The class teacher stated that his teaching and delivery was “*enhanced*” by the notes and preparation and the clearly stated assessment criterion in the curriculum profile. This time, “*it wasn’t just a case of going out and having a game or whatever, right run up and down, run back, this sort of thing – there were specific goals laid out and because of that my teaching was centred on these goals.*” Allowing the specific learning outcomes inform the assessment criteria placed a focus on teaching and learning throughout the unit of work. The breakdown of skill and technique in the lesson plan ensured the teacher knew not only what (*the content*) but also how (*the methodology*) required to assist his delivery of the unit of work. The alignment of the specific learning outcomes and assessment criteria to the indicators in the curriculum profile provided the teacher with an insight after each lesson and on an ongoing basis as to how the children were progressing in the area of athletics. Instead of relying on his traditional direct teaching approach for all lessons, he remarked that after lesson 1, his role evolved and grew into more of a “*facilitator*” as children became actively engaged with their learning.

The use of an assessment wheel was new venture for both the teacher and the children. It was envisaged that the assessment wheel would only serve to act as an additional pupil self- assessment tool that would inform the overall assessment of each child. An unexpected and unusual development with the use of the assessment wheel was obvious to the class teacher when he reflected on the children with low levels of self esteem who were “*more likely to make their levels of attainment (on their assessment wheel) lower, even if they were performing at the same level as others*”.

The teacher’s observations of children’s progress during this unit of work were matched to the curriculum profile indicators as work was undertaken. The teacher commented on what a positive experience the unit of work was for children and reflected on their responses to the unit of work as “*excellent*“, “*enthusiastic*“ and “*enjoyable*“. The combination of teacher observation, the facilitation of the assessment wheel, observing the children as they attempted to complete the challenge task during lesson 6 and comparing this knowledge to the indicators as laid down in the curriculum profile at many times during the unit of work, helped the class teacher become consciously aware of what children could do, what they knew and what they understood.

Bearing in mind the need for any assessment to be manageable and an integral part of the teaching and learning process, the class teacher considered the process of the curriculum profile to be “*teacher friendly*”. He found the objectives and specific learning outcomes which came together to form the curriculum profile “*easy to work with*” and feedback which could be gleaned from the assessment process for both child, teacher and ultimately parent to be very beneficial. During the interview the teacher commented on how the curriculum profile, which highlighted the specific learning outcomes, provided him with “*confidence*” to know what he should have been looking for during the lesson, it removed the “*fear*” factor from the lesson.

The class teacher also remarked that the curriculum profile can give the teacher confidence and “*if the teacher is confident the children will come along with you*”. He firmly believes a curriculum profile can “*guide a teacher’s teaching and take the fear*

away". It is this teacher's belief that national attainment standards that would consequently provide specific learning outcomes would be *"beneficial for both teaching and learning"*.

Recording of assessment: After the unit of work had been delivered to children the class teacher was firm in his belief that he could write a succinct profile of children's skill level in athletics. He said he would have no problem writing a *"decent report as to where they are at"*. A notable word of caution was sounded by the teacher when asked would he consider curriculum profiles to be a viable assessment option - *"in so far as it relates to the children in the class you are dealing with....if I had a weaker group of children – I could use the profile yes, but whether we would advance it further and bring in the assessment wheel I don't know..."*

During this unit of work the focus of the curriculum profile centred solely on the specific skills of athletics. It is acknowledged that the limited nature of this study prevented the researcher from incorporating the broader objectives of the Physical Education curriculum e.g. social and personal development, knowledge and understanding, creative and aesthetic development.

IMPLICATIONS AND RECOMMENDATIONS:

This study has provided a small, but perhaps significant step towards understanding the role of assessment and in particular, the curriculum profile as an assessment tool in PE. This study has shown that:

- Curriculum profiles are a valid and viable assessment tool in PE
- Clear criterion used for the purpose of this case study in curriculum profiles was welcomed by the teacher and pupils in question.
- Curriculum profiles can be used to communicate information, reaffirm the educational principles of the PE curriculum, acknowledge the attainment and progression of pupils, aid in recording their achievement and provide an indication of pupil/teacher involvement
- More traditional negative connotations of assessment as representing a sole summative purpose need to be compensated for with supplementary forms of assessment methods that help incorporate children into the assessment process and consequently enhance the teaching and learning experience for all.
- The limited nature of this study and the focus on a single factor – the curriculum profile – can only suggest subsequent investigation

It is possible to list a number of recommendations informed by this study. These include;

- the design and development of curriculum profiles for all six strands of the curriculum; the need to establish national standards that support the current objectives as laid out in the Physical Education Curriculum (DES, 1999a) or indeed general indicators that can be modified by class teachers to help support the emerging assessment needs in all PE classrooms;
- additional assessment tools that incorporate elements of self-assessment, suitable for both the junior and senior end of the school, need to be identified and presented to teachers as an aid to their implementation of the 'assessment as learning' process; provision of pre-service education and in-career development which will afford teachers with opportunities to extend their

knowledge and gain further competence and confidence with the implementation of formative assessment and in the practical use of a range of assessment tools.

- a continuation of classroom based research in assessment in physical education; research that will focus on the implementation of assessment in the physical education classroom and its potential to promote and enhance quality teaching and learning

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BREADTH, BALANCE AND BRIBERY IN PRIMARY PE
EXPERIENCES AND PERSPECTIVES OF PRE-SERVICE PRIMARY
TEACHERS

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Keywords: primary physical education, teacher education, socialisation, teacher beliefs

INTRODUCTION:

Quality Physical Education (PE) programmes at primary level in Ireland call for teachers to teach and assess with confidence and competence across a variety of activities. Traditional models of teacher education have focused on the development of content knowledge and personal and pedagogical skill development to prepare teachers to teach PE (Kirk and Tinning, 1990, Laker, 2003) However, there is an increasing emphasis on the role of student teachers' beliefs and their relationship with effective teaching and learning in PE (Xiang et al, 2002; O' Sullivan, 2005; Garrett and Wrench, 2008) Teacher socialisation theories are also regarded as central when examining effective teaching and learning in PE since they highlight the potential factors affecting teachers' work (Lawson, 1986; Curtner-Smith et al, 2008) This study examined the experiences and perspectives of a cohort of pre-service primary teachers to gain an insight into their motivations and expectations regarding the teaching of PE as they began their teaching careers. This paper will outline the background literature that underpinned the study, the aims of the study, the methodology selected and the findings. Conclusions will be outlined and recommendations will be made that can influence work with pre-service teachers and support them as they teach PE in schools.

BACKGROUND:

Pre-service teachers' confidence and competence to teach PE are influenced by both initial teacher education courses and their personal backgrounds in PE, physical activity and sport (Morgan and Bourke, 2005; Garrett and Wrench, 2007). By examining pre-service primary teachers' experiences, both personal and those related to field-based TP, we can gain an insight into the factors that may shape their belief structures and their future intentions regarding PE (Kulinna et al, 2000). There has been no research in an Irish context which examines student teachers' beliefs and attitudes regarding the teaching of PE. However there is a growing body of research internationally but much of this research has focused on teacher education at second level, where PE teaching is specialised (Graber, 2001; O' Sullivan, 2005). At second level, the research suggests that beliefs are formed early in life consisting of personal, biographically embedded concepts which shape what can be described as '*private theory*' (Bullough and Gitlin, 1995). In the primary context, for colleges of education to impact on student teacher beliefs and practices, it is argued that this '*private theory*' must be explored. This research set out to explore the personal and biographical experiences of a cohort of pre-service teachers in order to ascertain the foundations upon which such private theories were based.

Teacher socialisation theories are also relevant within the context of this research as there are many factors which can influence teachers' beliefs and consequently their actions as they enter into the teaching profession (Lawson, 1986; Stroot and Whipple, 2003; Curtner-Smith et al. 2008). The research focus within teacher socialisation has again been on specialist PE teachers (Mac Donald and Kirk, 1996; Curtner-Smith, 1998) but for this study the researchers believed that these theories were also relevant to the generalist primary teacher because they too would encounter the challenges inherent in socialisation. Lawson (1986) outlines three distinct types of socialisation: accultural, professional and organisational. The first two types were most relevant to this research and assisted in providing a context within which relevant research questions could be framed. Organisational socialisation, which involves analysis of in-service teachers who are teaching within the system, was outside the scope of this particular study.

Accultural socialisation is an ongoing process which begins at birth and is concerned with experiences, incidences and influences which take place during the natural course of life (Lawson, 1986). Previous research suggests that this may be the most potent type of socialisation that teachers experience (Curtner et al, 2008). Professional socialisation in the context of this study refers to the influence of teacher education courses on student teachers within PE methods courses and teaching practice (TP) placements. Curtner et al (2008) highlight that at second level, physical education teacher education courses are generally the weakest form of socialisation experienced by PE teachers. Garrett and Wrench (2008) suggest that TP placements, if preceded by a critical analysis of personal experiences in PE and pedagogical input from methods courses, are particularly meaningful in coming to terms with the complexity of teaching PE at primary level. Other evidence highlights that student teachers' experiences during TP are varied with many students drawing attention to the lack of confidence and competence of their class teachers (Chedzoy, 2000).

Pre-service teachers' self-perceptions in relation to their own fitness levels and involvement in sport are also found to be important when examining attitudes towards teaching PE. Katene, Faulkner and Reeves (2000) report that student teachers who were most physically active have the most favourable attitudes towards teaching PE. Conversely, the least active had the least favourable attitudes. Morgan and Bourke (2008) highlight that a major inhibiting factor to student teachers' confidence and competence when teaching PE is poor individual ability in sporting activities.

PURPOSE:

This study focused on a cohort of pre-service teachers with the following research questions central in the study:

- (a) What personal background and experiences with regard to PE, physical activity and sport do pre-service teachers have?
- (b) What are pre-service teachers' self-perceptions regarding their physical activity levels?
- (c) What experiences and perspectives of primary PE do pre-service teachers possess following their TP placements and their methods course as part of their professional socialisation?
- (d) What are pre-service teachers' future intentions in relation to the teaching of PE at primary level as they entered into the profession?

METHODOLOGY:

This study used a quantitative research design whereby a non-probability purposive sample of recent graduates (n=150) of the postgraduate diploma in primary teaching from two colleges of education were surveyed using a questionnaire. The sample consisted of recent graduates from the 2007-2008 programmes from St. Patrick's College, Drumcondra and Colaiste Mhuire, Marino Institute of Education. This was a pilot phase and was undertaken in order to test the research instrument and to inform the subsequent re-design of the study which was implemented with graduates from the 2008-2009 cohort. Forty-five females and 5 males responded (33% response rate). All respondents had completed either an arts degree or a science degree at undergraduate level.

Postgraduate students in primary teaching in Ireland undertake a full-time eighteen month professional course which includes PE modules totalling from 24-30 hours. During their PE methods courses, they explored a range of activities during practical seminars informed by the PE Curriculum (Government of Ireland, 1999). Their theory lectures were concerned with issues related to the teaching of primary PE including teaching PE during their TP placements.

The questionnaire design was informed by Lawson's teacher socialisation theory (1986) and was divided into sections reflecting student teachers' accultural and professional socialisation. Section one examined student teachers' biographical information and required them to recall their experiences of PE throughout their own schooling. The researchers recognise the limitations of reliance on recollection of past experiences of respondents. Nevertheless, such an approach provided some insight into their early PE experiences. Section two examined their personal background in relation to physical activity and sport. Section three explored their experience of TP placements. Finally, section four explored their future intentions to teach PE and examined the key messages they carried with them from their PE methods course. The quantitative data were analysed using SPSS 15.0 for Windows extracting descriptive statistics and frequencies, while the text of open-ended questions was analysed using the constant comparative method and relevant themes were identified (Flick, 2009).

FINDINGS AND DISCUSSION:

The findings from this pilot study, presented below in six broad categories, provide valuable insights into the perspectives and practices of pre-service teachers related to:

- (1) Their personal PE background
- (2) Their self-perceived fitness levels and involvement in sport
- (3) Their TP experience
- (4) Their competency levels related to key considerations of the primary PE Curriculum
- (5) The key messages that they carried with them from their PE methods course
- (6) Their future intentions related to the teaching of PE.

For ease of reading and to maintain consistency in the reporting of the findings of this study, responses were recorded as a count rather than as a percentage due to the small sample involved in this pilot phase of the study.

The personal PE background of pre-service teachers

Analysis of pilot data suggests that these pre-service teachers entered into the colleges

of education with varied experiences of PE, PA and sport. The influence of such experiences on pre-service teachers has been found to be potent in relation to their accultural socialisation (Curtner-Smith et al, 2008). Less than half of the respondents (19) rated their primary physical education experience as very good or excellent with comparable figures at second level (16) (see Figure 1).

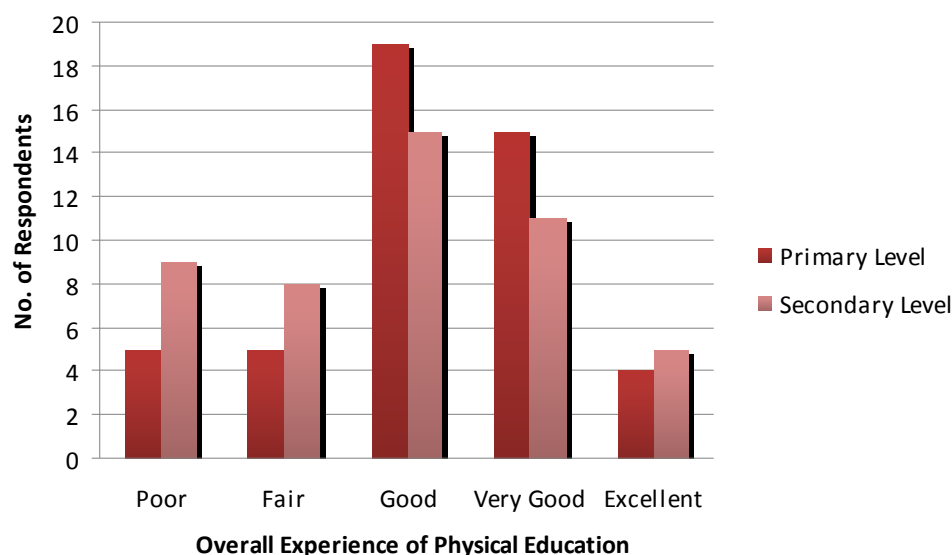


Figure 1: Overall experience of PE at school level

Games was reported as the most common strand experienced across both primary and post-primary school experiences with athletics as the second most common strand (see Table 1). Aquatics was experienced by almost half the respondents in primary school reflecting the study undertaken by the National Safety Council (1997) which reported that 46% of primary schools offered aquatics as an option to students.

Table 1: Breadth across strands at primary and second level

STRAND	Primar y Yes	Secondary	Primar y No	Secondary	Primar y Not sure	Secondary
Athletics	40	37	6	9	3	2
Aquatics	23	14	25	32	-	1
Creative Dance	3	8	44	40	1	-
Folk Dance	22	8	25	40	-	-
Gymnastics	26	31	20	17	2	5
Games	42	46	4	3	3	-
Outdoor/adventure activities	10	17	28	25	9	5

Almost half of the respondents (22) rated games as the aspect of PE that they most enjoyed although conversely games were also rated by almost a quarter of respondents (12) as the least enjoyable aspect. The following statements provide us with an insight as to why respondents held these sometimes contradictory views:

'I enjoyed team games because I played on teams outside school, I feel most successful in this area and I'm also competitive' (R 19)

'Games-I found them stressful as there was an over-emphasis on competitive aspects which can make the class scary if you're not strong at PE (R 12).

This apparent contradiction relating to the enjoyment of games resonates with a study in the Australian context undertaken by Morgan and Bourke (2008). Some respondents commented that one sport dominated the programme that they experienced in primary schools:

'Our school (secondary) was hockey mad-there wasn't any other sports so if you didn't like hockey there was little else to do. In primary school, the only PE I remember doing was Irish dancing' (R 31)

In primary a lot of emphasis was placed on Gaelic football which was unfair on those of us who were not good at it or had no interest in it' (R 48).

Self-reported fitness levels and involvement in sport

The study provided some data on pre-service teachers' involvement in structured and unstructured physical activity and sport. Some literature (McKenzie et al, 1999) supports the argument that physically active teachers provide higher quality PE lessons. Faulkner and Reeves (2000) report that student teachers with stronger self-perceptions of their fitness levels had most positive attitudes towards teaching PE. A majority of respondents (37) indicated that their current fitness levels were average or above average although they rated their current fitness levels slightly lower than they had been at second level (31 respondents indicated that their fitness levels during second level were in this category).

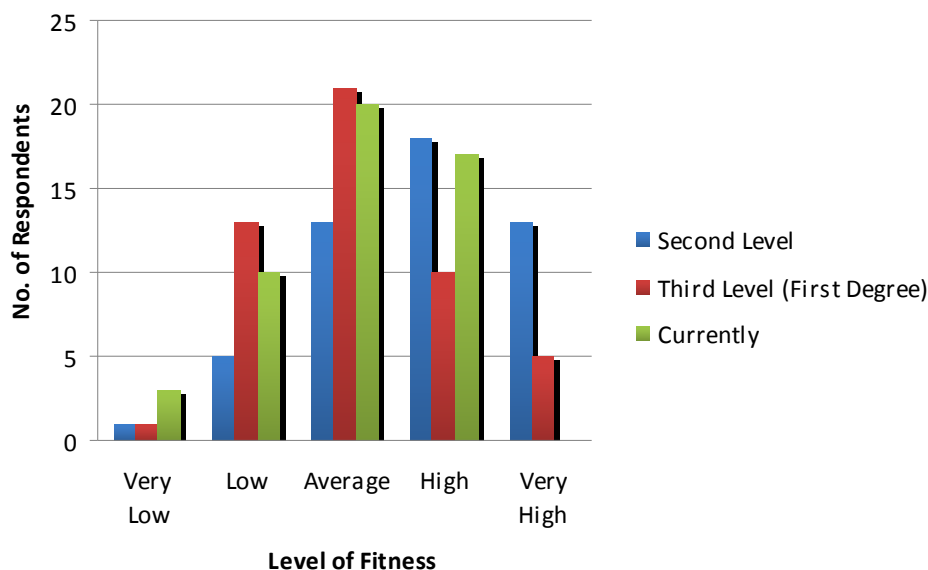


Figure 2: Self-perceived fitness levels

Teaching practice experience

The pre-service teachers involved in this study experienced three periods of TP in schools during the postgraduate programme. Respondents provided data on the frequency of PE teaching during their placement. Two thirds of students taught PE more than three times in their most recent practice. When asked to comment specifically on the positive aspects of their teaching of PE a majority of respondents (27) highlighted observing children's enjoyment levels as a particularly positive feature. Inhibiting factors were identified as lack of space, lack of equipment and dependency on the weather where indoor space was not available. These constraints reflect those experienced by practising teachers (INTO, 2004; Cosgrave, 2006; Murphy, 2007). A majority of respondents commented that they learned from the

experience:

'I got an insight into how other teachers teach PE and I will use the positive aspects in the future' (R 38).

'The more experience you get, the better equipped you are and the more confident you become' (R 29).

Many students commented that they had opportunities to teach aspects of content that they had engaged with as part of their college PE courses, providing some evidence that professional socialisation was occurring. They cited the fact that they had opportunities to learn as a positive feature of their placement. The emphasis they reported on children enjoying PE lessons highlighted a possible focus in their teaching. One significant aspect that was absent, however, relates to the children's learning in PE lessons which was emphasised throughout their PE methods courses. Overall, when considering the impact of TP placements on the students in this study it would seem to reflect the conclusions of Xiang et al (2000) that teaching PE in the school setting and observing PE classes were the most important components contributing to changes in pre-service teachers' beliefs.

Competency levels related to key considerations of the PE Curriculum (1999)

The cohort of pre-service teachers were asked to rank their competency levels across a range of statements that reflected the key considerations underpinning the primary PE Curriculum (1999) (see Table 2). These key considerations are embedded within practical and theory sessions in PE methods courses in both colleges.

Self-reported competency levels related to organising PE lessons, differentiating to meet individual needs and integrating PE with other subjects were high. This information provides evidence of the impact of professional socialisation on pre-service teachers as they clearly were influenced by the PE methods courses. Research suggests, however, that socialisation processes may occur simultaneously. Thus the impact of organisational socialisation (the host class/school) may have also impacted on these scores.

Other aspects were rated less favourably. It would appear that catering for children with special needs and assessing the achievements of children in PE represented particular challenges for pre-service teachers. This resonates with experiences of practising teachers reported by Sweeney (2008) who highlighted the need for support for teaching children with special needs. Drewitt (2005) similarly found that teachers needed support with assessment in PE.

Table 2: Competency levels related to key considerations

Key Considerations	Very competent	Competent	Somewhat competent	Incompetent	Total
Organising PE lessons	37	6	9	3	2
Differentiating to meet individual needs	14	25	32	-	1
Catering for children with special needs	8	44	40	1	-
Providing for maximum participation for all children in PE lessons	8	25	40	-	-
Providing appropriate opportunities to participate fully for both boys and girls	31	20	17	2	5
Assessing the achievement of children in PE	46	4	3	3	-
Integrating PE with other subjects	17	28	25	9	5

Key messages from the postgraduate PE course

This cohort of pre-service primary teachers were asked to identify the key messages that they would 'carry' from their postgraduate PE course into their teaching careers. Data were gathered on this aspect through open-ended responses to a question in the survey. Their responses could be summarised in terms of breadth, balance and bribery. They expressed strong opinions around the importance of offering broad programmes of content:

'Try everything' (R 41), 'Teach it all' (R 36), 'Start them young at everything' (R 19). They emphasised also the importance of providing balance within programmes of PE, avoiding the tendency to spend too much time on one aspect such as games. This was reflected in responses such as *'...make sure the kids experience all aspects in equal measures' (R 29)* and *'Don't just concentrate on games' (R 38)*. Others emphasised the importance of refraining from using PE as a 'bribe': *'Not to deny PE as a punishment for something else' (R 2)* and *'Don't use PE as a bribe! It's part of the curriculum and is essential in the lives of children' (R 39)*. For teacher educators many of the key considerations of the primary PE curriculum and the PE methods course were defined by respondents as key messages. This could indicate that professional socialisation is having a significant influence on their views contrary to the findings of Curtner et al (2008) who found PE methods courses as places where professional socialisation is weakest. A challenge for pre-service teachers is to implement PE programmes that reflect these key messages.

Future practice related to the teaching of PE

When asked about their intentions to teach PE all respondents considered PE as very important or important and almost all respondents (48) reported that they intend to teach PE twice per week given adequate facilities and equipment. They also reported that they planned to offer a broad and balanced programme of PE. In terms of their own personal strengths, they identified personal interest in sport as an important strength but identified enthusiasm, energy and positive attitudes towards PE as equally important. On the other hand, they identified safety factors and discipline issues as fears that they held as they began their teaching careers.

IMPLICATIONS AND RECOMMENDATIONS:

This study provides a valuable insight into the experiences and perspectives which may influence the teaching of PE by pre-service primary teachers. A number of implications and recommendations can be drawn from the findings reported above.

- (1) Respondents' personal experience related to PE in school was characterised by engagement with a narrow range of content. This prompts reflection on the expectation that students with such a background are being asked as teachers to offer a broad and balanced programme of PE to children. Teacher educators must ensure that students engage with a broad range of content during methods courses. It may also be useful to challenge their private theory based on their personal experiences of PE.
- (2) The self-reported fitness levels of the pre-service teachers indicate that they had average or above average fitness levels. While the work of McKenzie et al (1999) argues that physically active teachers provide higher quality PE this link between personal fitness levels and teaching competencies in PE was not explored in this study. Further study is needed to ascertain if this is the case. If McKenzie's argument is supported, teacher educators may also need to

include an emphasis on promoting personal fitness within the methods courses.

- (3) TP was viewed as a very important aspect of pre-service education in PE underpinned by the importance of children enjoying PE lessons. Cherishing, expanding and improving teaching practice PE experiences should be central to the work of teacher educators. However, there appeared to be a lack of emphasis on learning by children as a priority on TP. This should be a focus within the guidance provided for TP. Furthermore, constraints identified by the pre-service teachers must also be addressed if they are to implement the balanced programmes of PE that they aspire to. Changes at policy level are required to ensure that children can be provided with the equipment and facilities to engage with quality PE programmes. An annual grant for schools to be invested in purchasing new equipment would be a useful starting point.
- (4) Pre-service teachers felt their competency levels related to key considerations of the primary PE Curriculum were satisfactory, with the exception of areas such as working with children with special needs and assessment in PE. As a result, it is unlikely that they will cope with the demands of children with special needs or assessing children's achievements in PE. Such issues need to be addressed at both pre-service and in-service levels.
- (5) The key messages that they carried with them from their PE methods course reflected their understanding of the broad objectives of the PE Curriculum. Curtner et al (2008) cautions that this understanding can be challenged by organisational socialisation factors (those which occur in their school environment) and can impact on their practice. All supports provided for them as they begin teaching need to consistently remind them of these key messages. In addition, schools need to ensure where external providers of PE (e.g. coaches) are utilised, that they teach in accordance with the same key messages.
- (6) Pre-service teachers intend to teach PE frequently and offer broad and balanced programmes. Further longitudinal study could provide an insight into what effect the organisational socialisation may have on these intentions. They identified some fears related to aspects such as safety and behaviour management. PE methods courses may address these fears if more opportunities are provided to work with groups of children with an emphasis on these specific issues. Further support at in-service level may also be relevant here.

The longer-term impact of previous PE experiences and college courses on these pre-service teachers could be ascertained if follow-up research after a period of five years was undertaken. Such an extension of this study, with the addition of probing the organisational socialisation impact within their school, could provide us with a fuller understanding of the process of teacher socialisation. Knowledge of the experiences and perspectives of pre-service primary teachers can underpin efforts to gain this understanding.

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DO PHYSICAL EDUCATION LESSONS INCREASE PHYSICAL ACTIVITY LEVELS OF PRIMARY AGED CHILDREN? – PRELIMINARY FINDINGS

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INTRODUCTION

According to Hills et al (2007, p.533) “today’s generation of children will be the first for over a century for whom life expectancy falls”. This prediction is supported by the Department for Education and Skills’ (DfES, 2004) speculation that by 2020, 1 in 2 youngsters will be obese. Obesity is defined as “abnormal or excessive fat accumulation that may impair health” (World, Health Organisation, (WHO) 2006a). The DfES (2004) also suggested that once children become obese there is a tendency for this to continue into adulthood, where obesity links to life threatening diseases and subsequently impacts on increased demands on the Health Services. Tragically 1.9 million people die each year as a result of physical inactivity (WHO 2010). Inactivity and obesity levels are now such prominent features within society, that increasing pressure has been put upon the education system, and in particular on primary schools to rectify (Waring et al, 2007). Winsley and Armstrong (2005) point out overweight or obese children tend to be less physically active. A multidisciplinary approach such as the Change4Life (NHS, 2009) scheme, is currently being promoted in the UK which advocated not only the child, but the whole family becoming more physically active and looks at the diet and behavioural changes that can help children live longer.

Physical activity according to WHO (2006b) is a “fundamental means of improving physical and mental health”. Over the past century physical activity levels have decreased due to changes in lifestyle, which are in turn due to many factors including socio-economic status. People with lower socio-economic status tend to have “less free time and poorer access to leisure facilities or live in environments that do not support physical activity” (WHO, 2006b). Peterson et al (2006) focused on the relationship between being physically active and the quality of life and suggested that health promotion in particular should focus on those with lower incomes. This group of people have the most to gain from the promotion of physical activity, in order to reduce health issues. Wright et al (2009) also suggested that opportunities to participate in physical activity are affected by class.

Pressure has been placed on schools to reduce obesity levels because children, spend a considerable amount of their day at school. Children spend 7 out of their 14 average waking hours at school (Owens et al, 2000). Johns (2005, p.122) suggested that “when children are discussed in the obesity crisis discourse, school Physical Education has the potential to be implicated as a source of and as a possible solution to the problem”. Department of Health (DofH, 2005) stated that Physical Education (PE) lessons are prime outlets for increasing childhood physical activity (PA) and reducing obesity. DfES (1999) suggested that PE in England and Wales develops “pupils’ physical competence and confidence, and their ability to use these to perform

in a range of activities” (p.15). PA is defined “as bodily movement...resulting in energy expenditure” (Sirad and Pate 2001, p.440). However, before any solutions to the problem of obesity can be employed within the primary school, the PA levels of children need to be known and the contribution PE lessons make to these PA levels evaluated.

BACKGROUND

The UK Government PA guidelines (DoH 2005) suggested that children and young people aged 5 – 18 should be able to accumulate a minimum of 60 minutes of moderate or vigorous intensity PA within the day through “lifestyle activities, structured exercise or sport or a combination of these” (DoH 2005, p.7). This is equivalent to 3 METs or above each day, where 1 MET is defined as the rate of energy expenditure while at rest. Therefore 3 METs activity or above would expend at least three times the energy used by the body at rest, which is defined as “exercise that results in an increase in breathing rate, an increase in heart rate to the level where the pulse can be felt and the body feels warm, possibly accompanied by sweating” (Kent NHS Overview Scrutiny Report, (KNOSR) 2006, p.53). The Chief Medical Officer (DoH 2005) does not state whether these PA levels are being successfully accumulated in primary schools, nor does he state when within the school day should these activity levels be reached. It is important to know the children’s existing PA levels prior to suggesting any solutions or strategies for primary schools.

Previous studies, have found that not all children were able to reach recommended targets. For example, Duncan et al (2007) examined PA levels in 208 school children using pedometers, over a period of 4 days. They found that only 28.7% of boys and 46.7% of girls reached the PA targets. However the study was over one weekend and 2 school days and did not take into account the type of lessons that occurred on the 2 school days recorded, so the potential affect PE lessons on overall PA levels was not considered. Another study by Al-Nakeeb et al, (2007) investigated the “precise estimate” of both PA and body fatness in primary school children. This study was carried out in 4 different schools, but within the same catchment area. Heart rate monitors were used continuously for 12 hours a day to record intensity and duration of physical activity. They found that over their 3 separate recording days, 52% of children did not achieve a single 15 minute bout of moderate physical activity and that girls possessed significantly more body fat than boys. Nonetheless Pearce et al (2008) suggested that PA levels are variable and difficult to assess as PA tends “to change with days, weeks, seasons”.

Malina and Bouchard (1991 p.14) suggested that “regular physical activity participation throughout childhood provides immediate health benefits by positively affecting body composition and musculoskeletal development.” Similarly Ziegler (1994) suggested that school PE is the place that provides a context for regular and structured PA participation, which will ultimately aid children’s health. Doherty and Brennan (2008) indicated from their definition of PE, there is much more to school PE than just being physically active. PE is about the whole education process of the child; “that is concerned with lifelong physical, intellectual, social and emotional wellbeing that accrues through experiencing physical activities in a variety of contexts. (p.6)” Through this “whole education” approach, within PE lessons, the child’s attitudes and interests can be fostered and an understanding of the importance

of diets and healthy lifestyles can be imparted, rather than simply providing exercising opportunities for every child. However it is important for the school and class teachers to know how physically active their children are, if it is the role of PE lessons to also decrease obesity levels (Johns, 2005). Therefore it is important to examine and compare the PA levels on school days that include PE lessons and those that do not include PE lessons

PURPOSE

The purpose of this initial study was to examine the PA levels of primary school aged children and if PA levels increase on days with PE lessons. The following research questions were addressed in the study:

- 1) If pressure is placed on school to reduce obesity, are children (aged 6 – 10) able to reach the UK Government's accumulation targets of 60 minutes of moderate to vigorous physical activity levels during the school day (9am – 3.10pm)?
- 2) Do children's overall PA levels increase on days that include PE lessons?
- 3) Do children's overall PA levels vary according to gender and year group?

METHODOLOGY

The study adopted a mixed methods design approach. These included: case study, ethnographical style, longitudinal and action research. The case study was used to "provide detailed information" (Thomas, Nelson and Silverman, 2005 p.290) on the current levels of children's PA within the school day. Geographically, the school was set in rural Ashford, South East of England. The school is a rural village Church of England school with under 200 children on its roll. The ethnographical style and action research approach allowed the researcher to be immersed in the school setting and to observe the children having their PA levels recorded through the use of accelerometry.

The children ($n = 20$, age = 7yrs 10mths \pm 1 yr 5mths) were from 2 different year groups, 10 from year 2 and 10 from year 5, all from the same socio-economical background. The sampling method used, was understood by the children as they were familiar with it. It consisted of children volunteering to participate in the study and their class teacher then selecting names out of a hat. The children felt that this was a fair and transparent method for randomly selecting them, as this system was often used at the case study school for choosing children. Though volunteering was acknowledged as a potential limiting factor, due to subjective and selection bias, all children in both classes volunteered to participate, so effectively making the selection random.

Ethical approval was gained from the Faculty of Business and Sciences Research Ethics Committee at Canterbury Christ Church University. Permission and informed consent was sought and gained from the children's parents of those who had volunteered and then had been successfully picked. It was also gained from the school and from each child before commencing in the research. The right to withdraw at any time and confidentiality was discussed with all three parties. The parents were also kept up to date and informed through newsletters throughout the research, as Greig et al (2007) stated that is important to maintain a good relationship with the gatekeepers of the children e.g. the parents or carers. The study was explained to the children and any questions were answered.

Data Collection: Accelerometers (7164 model, ActiGraph, Florida) were used and have been found to be appropriate and reliable measurers of PA (Knight et al (2007) and Cardon et al (2007)). Children wore the ActiGraphs for 6 school days. The school day is defined as from 9am until 3.10pm. The 6 days included 3 days that included a PE lesson and 3 that did not. The accelerometer data recorded acceleration counts in 1 minute cycle time sampling interval. This was chosen due to the amount of data that would be collected (over 16 million rows of data). This sampling interval would consider sustained PA and would filter out noise of the children fiddling with the accelerometers, which was expected to occur due to the age of the participants. The 1 minute activity counts were downloaded and were converted into METs into an Excel file.

FINDINGS

Within this study the data were examined through descriptive statistics and statistically analysed using SPSS version 17.0. An Analysis of Variance (ANOVA) was used to compare the PA levels of children according to their gender and year group. A p level of <0.05 was accepted as statistically significant. The average number of minutes of moderate intensity (over 3 METs) PA levels was recorded (see figure 1). It was found that the mean number of minutes of PA over 3 METs for all 20 participants was 44 (± 18) minutes for the days that included PE within the curriculum and 40 (± 14) minutes for the days that did not include PE. This is however under the recommended Government's target level of 60 minutes of moderate to vigorous intensity PA levels. No significant difference ($p=0.235$) was found between the PA levels on days with PE lessons and days without.. Therefore overall PE lessons did not have a significant contribution in increasing the amount of PA experienced by the child. However days with PE lessons did involve more activity, and the variance of both days was wide ranging.

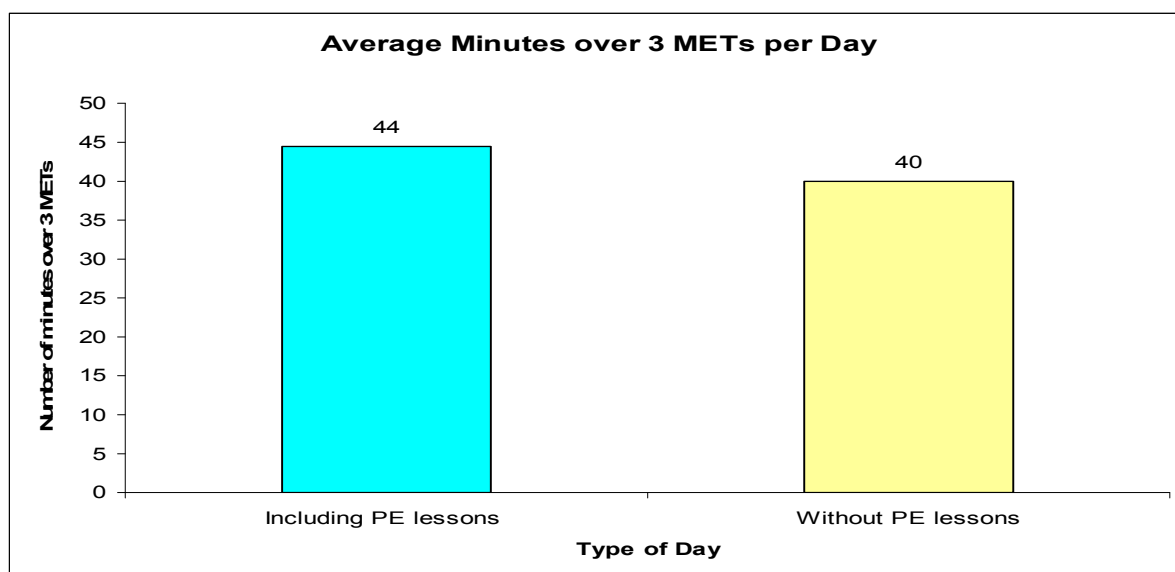


Figure 1.

The data was analysed to consider if gender contributed to overall PA levels. It was found that the average number of minutes of PA over 3 METs for all 10 boys was 55 (± 15 minutes) for the days that included PE within the curriculum and 43 (± 10) minutes for the days that did not include PE. The average number of minutes of PA over 3METs for all 10 girls was 39 (± 18 minutes) for the days that included PE within the curriculum and 34 (± 20 minutes) for days that did not include PE. There was significant difference ($p=0.021$) between the genders, with boys spending more PA time at a level of moderate to intense throughout both days. For both boys and girls the variance was wide ranging.

The data was also analysed to consider if the year group contributed to overall PA levels. It was found that the mean number of minutes of PA over 3 METs for year 5 children was 43 (± 15 minutes) for the days that included PE lesson and 34 (± 10 minutes) for the days without PE. For the year 2 children the mean number of minutes of PA over 3METs was 46 (± 20 minutes) for the days that included PE lesson and was 46 (± 15 minutes) for the days without PE. There were no significant difference ($p=0.239$) found between year groups and PA levels. However year 5 children were more active on PE lesson days. The year 2 children, though they had the same average total, had a wide range of variance.

IMPLICATIONS AND RECOMMENDATIONS

The implication of this study is that children are not able to meet UK Government's recommended targets of physical activity (DofH, 2005) on school days that include PE lessons, nor on those that do not. Though it is acknowledged these targets have not yet been set for just the school day (9am – 3.10pm).

However whilst no intervention was carried out in this study nor was this the purpose of the research, it does however provide important information of the levels of PA normally achievable within the school day. This is important for the primary school,

especially with the increased pressure on schools to act as a solution to the problem of obesity (Johns 2005). Harrington and Donnelly (2008, p.66) agreed with the need for knowledge, and stated that “before any strategies to increase PA can be employed, the activity levels of children need to be known.” The primary school may have previously assumed that if they had been awarded the healthy school mark (Healthy Schools 1999) and devised their own PA policy to improve overall PA levels, that the children at that school would be able to reach the recommended targets within the school day.

If the case study school and the researcher as a Teacher Educator wanted the study to give them any implications as to where there were opportunities within the school day, to further increase the children’s PA levels, then further analysis is needed to identify what happens at different points within the school day. This analysis of different parts of the school day, would also allow for the actual PA levels within the PE lesson to be explored. Currently the analysis is limited as it suggests what is occurring over the whole day not during specific parts of the day.

From the results, it is suggested that days that include PE lessons make a major contribution to overall PA levels. However it is acknowledged that the study is limited and without detailed analysis of the different parts of the day it is unknown whether the PE lessons actually encourage children to be physical active, or whether there are other roles for PE lessons, in the child’s development (Doherty and Brennan, 2008). It could also be suggested that the idea of having a PE lesson within the day adapts the child’s PA levels within other parts of the school day, so for example, are the children less active at lunchtime, if they know they have PE in the afternoon and conversely are children more active at lunchtime on a day that does not include a PE lesson.

Another consideration of the results of this study is that children sleep, according to Owens et al (2000), for 10.16 hours \pm 44.48 minutes a day. A child is therefore awake for approximately 14 hours during a whole day, of which they spend only 7 hours within the primary school. As 7 hours is only approximately half the time that the children are awake, it could be argued that school should only be responsible for half of the recommended target of PA levels that is for 30 minutes at over 3METs. If this is the case, then all children within the case study achieve this regardless of the whether the day includes PE lessons or not. Further research would be needed to examine opportunities outside the school day to ensure that children were able to reach their overall daily PA levels in other settings.

Another implication of this study is further analysis of the different parts of the day would then be able to identify when the children were reaching their moderate to intense levels of PA and whether this is within one particular part of the day, for example in the morning, lunchtime or afternoon break, during curriculum time (but not PE) or within PE lesson itself or whether it is an accumulation throughout the whole day. It may be after this further analysis that recommendations can be made for opportunities to increase the PA levels of all children which would contribute towards the daily UK PA targets and the targets themselves made realistic and based on empirical data.

In conclusion, this study shows in this school that children do not meet the UK Government recommended PA levels (DofH 2005) however children were more active on days that included PE lessons, though this was not significantly different from day without PE. There were significant differences with gender, with boys being more active overall. There was no difference between the year groups studied. The children in this case study school achieved well over 30 minutes of the target PA levels which is important data when considering the child only spends half of their waking day at school. However further investigation is needed into the breakdown of PA levels within different parts of the school day and during the remainder of the children's waking hours.

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LIVING THE CURRICULUM: INTEGRATING CURRICULUM DELIVERY MODELS INTO TEACHER EDUCATION

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KEY WORDS: sport education, physical education teacher education, pre-service teacher, curriculum

INTRODUCTION

Preliminary research investigated four qualified physical education (PE) teachers who had experienced how to teach Sport Education (SE) in a three day interactive workshop. Interviews were conducted to explore their perceptions of learning to teach SE, their uses of SE and their recommendations as to how SE should be taught to future PE teachers. These PE teachers recommended that SE be embedded within the delivery of physical education teacher education (PETE) programmes. The purpose of the project reported here was to take on board the PE teachers' suggestion and examine PSTs' experiences of learning to teach SE through integrating SE into a PETE programme.

BACKGROUND

SE is a curriculum model that aims to develop students as "competent, literate and enthusiastic sportspeople" (Siedentop, 1994; pg 4). Competent in the sense that students are able to play the game with a required level of skill and tactical knowledge. Literate in the sense that students understand and appreciate the rules and traditions associated with the sport. Enthusiastic in the sense that students wish to enhance and protect the sporting culture through their participation. SE achieves these aims by providing students with positive and authentic sporting experiences. There are six key characteristics of SE; sports are organised into seasons, students are part of a team, sport seasons are defined by practice and formal competition, sport seasons usually end with a culminating event, records are kept throughout the season and festivity is encouraged.

Research has begun to focus on the area of PSTs' experience and use of SE. Some authors have noted the gap in the research literature regarding how teachers learn to teach and use the SE model and have aimed to address this short fall (McCaughtry et al., 2004; McMahan & MacPhail, 2007). McCaughtry et al. (2004) believe such research offers fruitful extensions of, and a missing companion to, SE's development. It has been suggested that SE should be included as a primary component of any PETE programme (Alexander & Luckman, 2001; Curtner-Smith & Sofo, 2004; Dyson, Griffin & Hastie, 2004; Kinchin, Penney & Clarkes, 2005).

Suggestions have been provided as to how SE could be included in PETE programmes, with Collier (1998) proposing that SE be introduced to PETE in three ways. Firstly through faculty modelling, where the faculty would teach a performance course through SE so PSTs experience it as participants (supported by Kinchin, 2003). Secondly through focused observations, which would provide PSTs with an

opportunity to observe SE being done well in practice. Finally through teaching in clinical and field settings, allowing the PSTs the opportunity to teach using the model to their classmates and eventually in their teaching practice placements.

Similarly, Stran and Curtner-Smith (2009) believe that the core of any PETE programme where SE is included should allow the teaching of a series of faculty-presented mini seasons within early field experiences as well as PST designed seasons on TP. In addition they believe a number of factors serve to facilitate PSTs competence in delivering effective SE seasons including faculty member credibility, their commitment to training teachers and their preparation to do so along with an understanding and appreciation of the PSTs' acculturation. They further believe that PETE programmes' willingness to contrast effective and ineffective pedagogies, supervise early field experiences and teaching practice (TP) closely, and their ability to develop a technical language through which they and PSTs can discuss teaching also play a significant part in winning PST's over and facilitating their ability to teach SE effectively.

Oslin (2002) states that a "vast majority of PETE programmes in the US teach movement content through a series of traditionally taught activity courses, then teach curriculum as part of the methods course"(pg 424). To this extent the PSTs experience the content and pedagogy in isolation of each other. Oslin (2002) believes that PETE programmes should allow their students to experience the curriculum firsthand, supporting Kinchin's (2003) recommendation of delivering practical subject matter knowledge components using SE. Oslin, Collier and Mitchell (2001) note such experience as "living the curriculum", advocating for the link to be made between pedagogical knowledge and subject matter knowledge (SMK) by delivering the two together in a PETE programme. Subsequently, the previous activity courses of PETE programmes associated with Oslin et al. (2001), Jenkins (2004), and Kinchin (2003) were taught through curriculum models such as SE. Such opportunities allowed the PSTs to experience the curriculum as students and gain an enhanced appreciation and understanding for the model. Each study reported that the PSTs were successful at teaching SE as a result of their SE experiences in their PETE programme.

PURPOSE/ RESEARCH QUESTIONS

The purpose of the project was to examine PSTs' experiences of learning to teach SE through integrating SE into a PETE programme.

METHODOLOGY

This study was conducted in a four-year undergraduate PETE programme in Ireland, which enrolls approximately 80 students each academic year. The participants of this study were one group of 20 PSTs associated with a 75 year 3 PST cohort.

SE was incorporated into a 12-week net-games module that focused on tennis, badminton and volleyball. The module included two 1-hour practical classes a week. The module was purposely structured to include all key aspects of SE and inform the PSTs of effective teaching practices to be used in school. For the purpose of "living the curriculum" the PSTs were required to select teams and remain on that team for the entire module. They also completed team sheets, picked team colours and names

and participated in practices and competitions as part of their team. Within their team the PSTs were required to take roles such as warm-up officer, coach, equipment manager and referee consistent with SE. The lecturer gradually included various aspects of SE throughout the module which included team selection and affiliation, use of task cards, roles, festivity, formal competition and the use of modified games.

Various methods of data collection were used throughout the module. The researcher conducted independent observations of the PSTs and the lecturer, focusing on critical incidents that occurred during each of the classes, the reactions of students to the teaching style and the lecturer's use of the model. From these observations he kept reflective log diaries (Bell, 1993) of each of the classes and the lecturer of the module also kept reflective log diaries on her perceptions of the module including her thoughts on what worked effectively/ ineffectively and the PSTs' reactions to the module.

On completion of the module, focus groups (Rubin & Rubin, 1995) were conducted with 10 of the PSTs. The participants volunteered to take part in the focus groups after an expression of interest was offered to all PSTs in the class group, all participants read participant information sheets outlining the purpose of the focus groups and signed informed consent forms. The 10 PSTs were randomly selected to form two groups of 5 PSTs each. These focus groups followed a semi-structured format, which granted freedom for the participants and the interviewer to follow other lines of inquiry if deemed to be more appropriate. These focus groups were aimed at evaluating the PSTs' experiences of the module and how they perceived the value of the learning experiences they received, as well as encouraging them to express their future intentions for use of the SE model. The lecturer was also interviewed (Greenfield, 2002) in order to gather reflections of how she evaluated the PSTs' learning experiences through "living the curriculum" and her own experiences of delivering a net games module through SE.

All recordings from the interview and focus groups were transcribed and analysed using thematic coding (Rubin & Rubin, 1995). The data was analysed to identify any reoccurring themes or themes which were consistent or conflicting with the literature on PSTs' experiences with SE. The reflective log diaries from both the researcher and the lecturer were also analysed using thematic coding where comparing or contrasting themes were identified. PSTs' unit plan assessments were also read in order to observe the PSTs' understanding and intentions for future use of SE.

FINDINGS

From the multiple data sources a number of themes were identified. Predominately these include the effectiveness of the learning experience, appreciation for living the curriculum and content knowledge within the module.

(1) Effectiveness of the learning experience

Comments regarding the effectiveness of this learning experience were prominent throughout the PSTs' focus groups. One of the PSTs expressed how she felt confident to teach after the module;

“I thought it was brilliant because after our...first experience was tennis, after 6 weeks of tennis I would have had no bother to go out into a school and teach tennis”

(Emma, Focus Group # 1)

One PST stated that she *“thought it was very effective....it showed us that we could do the same when we went out on [teaching practice]”* and *“we could see that if something was working if we were bored we would know that the kids were going to be bored”* (Emma, Focus Group # 1). Similar comments about teaching SE in Irish post primary schools included one PST expressing that he would teach in a similar style to the lecturer *“I will be going the [lecturer’s] way about it”* (Tim, Focus Group #1) and another commented that *“I will definitely be using Sport Education anyway in one or two of my classes if not the majority I think it is brilliant like”* (Jacob, Focus Group #2).

The lecturer of the module also commented on the effectiveness of the module, *“overall it has been a positive experience for the [PSTs] to experience a different way to teach”* (Lecturer, Interview). The lecturer similarly expressed this feeling in her reflective journal, *“I feel the group have begun to develop a greater understanding of what sport education entails”* (Lecturer’s Log: Week 1, Session 2) and later expressed that *“it was good to see the [PSTs] gain a greater understanding of the benefits of assigning roles in class”* (Lecturer’s Log: Week 2, Session 1), these comments illustrate the lecturer’s opinion that the learning experience was effective.

(2) Appreciation of living the curriculum

Many of the PSTs appreciated the fact that they got the opportunity to live the experience of being in a SE class, particularly with respect to team affiliation;

“we just experienced it ourselves like not being just told this is what Sport Education is and this is what you do actually being put into teams and you have to affiliate with your team like actually just experiencing it”

(Eve, Focus Group #1)

The observations from the researcher confirm this engagement with team affiliation. On numerous occasions the PSTs were observed to be within their SE teams, using roles and learning from each other (Researcher’s Log: Week 3, Sessions 1 & 2). The lecturer also observed this trend and commented;

“The students automatically got into their teams and relationships had clearly developed. One group were overheard discussing their team colours and the fact that two of the group had not worn their chosen colour”

(Lecturer’s Log: Week 3, Session 1).

The PSTs were involved in the team selection process in Week 2, Session 1 and completed team affiliation sheets where they identified their team name, team members and team colour (Researcher’s Log: Week 2, Sessions 1 & 2). The team

affiliation processes proved popular with PSTs and they had a strong preference for being taught through being a participant in the module. In particular they mentioned how they enjoyed the module being delivered through SE;

“I thought it was good the way we were introduced to Sport Education within the module...I thought that was very beneficial that we learnt by actually doing it and not just reading it out of a book you know”

(Ciara, Focus Group #2)

(3) Content knowledge within the module

The PSTs reported they did not receive less content knowledge in this module to that of other practical modules and even thought that *“it probably improved [content knowledge]”* (Sarah, Focus Group #1). This was verified by the quality of SE Unit Plans completed by the PSTs. Each of the SE Unit Plans demonstrated how the PSTs had gained considerable content knowledge during the module; all Unit Plans provided a good introduction to SE and a rationale for using SE (SE Unit Plans # 1, 2, 3 & 4).

Albeit there were some instances in which poor content knowledge was expressed in the SE Unit Plans. One Unit Plan failed to identify record keeping as a key feature of SE and introduced all aspects of SE during their first session in their season plan (SE Unit Plan # 2). Another Unit Plan did not list the various team selection methods that could be used in SE (SE Unit Plan #3)

From the start of the module the lecturer was concerned with the PSTs' content knowledge of the net games. The lecturer reported these concerns in her reflective log;

“As the level of ability and subject knowledge of the group was low (first block of net games on their course), I feel the students found it hard to give effective feedback to their peers. The students were then given the opportunity to come up with ways in which to progress each skill or make it appropriate to lower or higher ability pupils, again an area they found difficult”

(Lecturer's Log: Week 1, Session 1)

DISCUSSION

This study supported that SMK and pedagogical knowledge be taught together in an effort to provide enhanced learning experiences for the PSTs, consistent with recommendations provided by Darling-Hammond (2000). The PSTs in this study believed that their understanding of SMK and pedagogical knowledge was enhanced through their inclusion in the module taught through SE.

When teaching using the 'live the curriculum' method it is important that we consider a number of factors pertinent to an effective experience. Firstly, as illustrated in the PSTs' experiences, it is imperative that the experience is as similar as possible as to what is to be expected in schools. That is, the SE theme should be present throughout the module and efforts should be made not to let its focus diminish after a number of

weeks. Significant efforts should ensure that all areas of a particular curriculum are taught in detail so that PSTs have the required understanding of the model. As SE as an identifiable curriculum model is relatively new within Irish PE, it is unlikely that any of the PSTs would have experienced it during their primary and secondary PE classes. Being provided the opportunity to be a participant in a SE season before continuing to use it in their teaching will hopefully assist the PSTs in knowing various methods of delivering such a curriculum model.

The acquisition of content knowledge has not clearly been defined in this study. It was the lecturer's opinion that content knowledge was suffering as a result of the module being taught through SE, although the PSTs did not believe their content knowledge suffered. In many instances during this study the lecturer expressed concern over the PSTs' skill development from using student coaches. Being able to perform practical skills should not dominate the content of a PETE programme, rather the pedagogical knowledge of how to teach these skills should be explored in tandem with SMK (Oslin et al, 2001).

IMPLICATIONS AND RECOMMENDATIONS

Research on living the curriculum and the inclusion of Model Based Instruction (Gurvitch, Lund & Metzler, 2008) within PETE programmes is at an early stage. Research where PSTs have the opportunity to use the SE model on their first teaching practice placement and where opportunities have been offered allowing the PSTs to refine their use of the SE model would offer an extension to the discussion on how best to include the model in a PETE programme. Longitudinal studies, which examine the PSTs' use of the SE model as future qualified teachers, would provide valuable feedback on the supports and constraints within contexts that impact on the extent to which SE is a permanent feature of the PE programme, and how teachers pursue and promote the SE model in their practice.

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LEARNING TO TEACH ADVENTURE EDUCATION: PRE-SERVICE TEACHERS' PERSPECTIVES AND EXPERIENCES

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KEY WORDS: Pre-service teachers, teacher education, physical education, teacher planning, learning to teach

ABSTRACT

Feiman-Nemser (2008) noted the importance of teacher education on the development of teachers, and “how teachers acquire, generate and learn to use knowledge in teaching” (p. 698). The purpose of this investigation was to examine aspects of adventure education for which pre-service teachers’ (PTs) planned and subsequently taught during a teaching practice (TP) placement. We also sought to gain an understanding of the challenges these PTs faced when teaching this content as part of a physical education curriculum. Data were collected through schemes of work (SoW) and lesson plans (LPs), researcher field notes, a focus group interview, and post lesson discussion. Analysis of data sources revealed little alignment between what PTs planned and what they taught. Attempts were made to incorporate debriefing into lessons but no adventure principles were integrated (Full Value Contract (FVC), Experiential Learning Cycle (ELC) or Challenge with/by Choice (CbC). Challenges that impacted the delivery of lessons included lack of resources and facilities, and perceived student resistance. Findings suggested PTs misunderstood the adventure principles and struggled with adapting and applying knowledge during teaching practice. PTs often focussed on ‘filling time’ as opposed to teaching toward student learning. Further study is needed to examine how teacher education is delivered and what adventure experiences PTs enter teacher education with, to understand why and what PTs plan for and teach and what influences their decisions.

INTRODUCTION

Feiman-Nemser (2001) suggested teachers have two jobs, they have to learn and they have to learn to teach. There was a time when content knowledge was the pre-determining factor in gaining teacher recognition (Shulman, 1986) yet it cannot be assumed that merely having knowledge infers ability to teach. Shulman (1986) argued the importance of learning content and pedagogy simultaneously which he coined, pedagogical content knowledge. Through pedagogical content knowledge PTs gain content knowledge and how to teach this specific content. Siedentop (2002) argued that it is not possible to have pedagogical content knowledge without content knowledge and shared his view that much focus today is placed on pedagogy rather than content. Oslin, Collier and Mitchell (2001) discussed how their Physical Education Teacher Education (PETE) programme delivered content through different curriculum models facilitating PTs to “live the curriculum” during their teacher education. They reported that PTs “demonstrated greater understanding of the concepts” (p. 51) of the models and taught “with much greater comfort during their field experiences...” (p. 51) when pedagogical content knowledge was integrated with learning of curricular models.

Research has consistently recognised the significance of the TP experience for PTs as they learn to become teachers (Graber, 1995, Rovengo, 2003,). Dodds (1989) argued

that TP is the “closest juncture between formal teacher training in universities and on the job training in schools” (p. 8). Grossman and Richert (1988) suggested difficulty in distinguishing between what PTs learn in the field and during their teacher education. If we are to understand what impacts PTs as they learn to teach and inform teacher education practices it is important to begin to understand what PTs learn about teaching, what they are teaching, why they are teaching the content they are teaching, and how they are teaching this content.

Research has demonstrated that PTs are faced with many challenges during their TP experience (Behets, 1990, Capel, 1997, Fuller, 1969) including management concerns (Fuller, 1969, Tsangaridou, 2007), student resistance (Behets, 1990, Rovengo, 1994) and anxiety (Behets, 1990, Capel, 1997). Dodds (1989) argued that all personnel within the teaching environment influence teaching and that it is essential that teacher education study what “happens to trainees in the field...” (p. 8). It is necessary for teacher educators to recognise challenges faced by pre-service teachers and make sense of the impact of these on PTs as they are learning to teach. For knowledge and practice to support and influence each other Cochran-Smith (2005) prompted us that research is needed on “what teacher candidates actually learn, how they use what they learn in schools and classrooms...” (p. 302).

Adventure Education

Adventure education is framed by the experiential learning cycle (Dewey, 1938; Kolb, 1984) that integrates experience with guided reflection and analysis (Brown, 2006). The adventure education model (Henton, 1996) when integrated within a school setting incorporates the models guiding principles; the experiential learning cycle (ELC) as described above; the full value contract (FVC) and challenge by/with choice (CbC). A FVC is a contract developed by participants to guide behaviour, effort and commitment through the setting of goals and gaining group consensus to work towards achieving those goals. The CbC principle requires the teacher to design activities with more and less challenging options to allow choice of participation levels by all students.

Research has highlighted the benefits of adventure education programmes for students (Carlson & McKenna, 2000, Dyson, 1996, McKenzie, 2000). No research was found on how PTs implement and engage with adventure education as a curriculum model and in turn how these PTs work with their understandings of the model in the school context.

Irish Curriculum

The secondary school system in Ireland is divided into junior cycle (1st year – 3rd year) and senior cycle (5th year – 6th year) with an optional transition year in between (4th year). A Junior Cycle Physical Education (JCPE) curriculum syllabus was introduced in 2003 by the National Council for Curriculum and Assessment (NCCA) while a senior cycle and leaving certificate curricula are currently in draft format. The JCPE areas of study include adventure activities as one of the seven content areas. The aim of the adventure strand of the JCPE syllabus is to challenge and develop students’ personal and social skills through participation in adventure activities conducted in a safe and enjoyable environment (JCPE, 2003). The syllabus provides students with opportunities to develop decision making skills, leadership qualities, awareness and consideration of the environment, personal and group safety awareness through enjoyable participation and reflection (JCPE, 2003).

PURPOSE OF THE STUDY

This study investigated PTs experiences planning for and teaching adventure education during their first post-primary TP experience. The study aimed to gain insight into what they planned to teach and what they actually taught as adventure education; as well as gain insight on challenges they faced during TP and how these impacted their teaching.

METHOD

Setting and participants

Participants were PTs studying for a B.Sc in physical education. Eleven 2nd year pre-service teacher education students, who previously experienced an adventure education applied studies module and were teaching adventure during their first TP experience volunteered for the study; two male and nine female ranging in age from 19 to 20 years and two volunteers being 26 years. This experience consisted of a six week block placement within the junior cycle programme in the school setting with number of adventure lessons taught varying from one to four. The researcher was not involved in tutoring or grading these PTs, all who have been given pseudonyms, Elaine and Claire.

During first year of the teacher education programme the PTs 'lived the adventure curriculum' they would teach in schools. PTs experienced adventure education through a themes-based approach (getting to know you, co-operation, communication, building trust, problem solving and group challenges) with experiential activities introduced through the integration and development of adventure principles; FVC, CbC, ELC and debriefing/processing the experience (Henton, 1996). Once trust and co-operation were developed PTs 'lived' the outdoor education component through orienteering and camp craft on campus and during an outdoor adventure centre experience. PTs learned adventure education through a pedagogical content knowledge approach; learning as students and learning as teachers; experiencing adventure education as participants, peer teachers in the university setting and as adventure education teachers in a primary school setting. Teacher education was the PTs first experience of adventure education as other than a 1-day recreational experience at an adventure centre they had not been exposed to this strand in their primary or post primary school curriculum.

Data collection

The researcher observed two of the eleven volunteer PTs actually teaching their adventure education lessons during TP. The other nine participants participated in all data collection components other than teaching observations. This paper reports data from the two PTs that participated in all data collection components (n=2). The researcher was keen on following a larger cohort of students however due to timetable and administrative constraints, it was not possible.

Four data collection methods were employed during this research; collection of lesson plans (LPs) and schemes of work (SoW), researcher field notes from lesson observations, a post lesson discussion and a focus group interview. The key data set was the focus group interview.

Lesson Plans and Schemes of Work

PTs submitted LPs prior to each lesson while adventure SoW were collected after TP was completed. Analysis of the teaching plans was to gain knowledge on what PTs

planned to teach prior to observing their lesson. LPs were compared to researcher observation data and informed questioning in focus group discussions. The role of SoW was queried during discussions.

Researcher Observation Field Notes

Elaine and Claire taught in the same secondary school. The researcher observed both PTs teaching two of their four adventure lessons, keeping field notes on all aspects of the lessons using a guided note format. Guided notes focused on which aspects of adventure education were taught, methods used to deliver lessons and consistency to what was planned. Data from field notes guided focus group questions.

Post Lesson Discussion

Due to timetable constraints only one post lesson discussion was held which followed Elaine's second of four lessons to gain insight into her perspectives of the lesson e.g. planning, challenges, lesson progression, and implications for future practice.

Focus Group Interview

The researcher met with PTs at the close of TP experience for a semi-structured focus group interview. As Elaine and Claire were the only two of eleven pre-service teachers observed teaching adventure lessons, they formed one of the focus groups and they were prompted to discuss challenges and experiences they had during their teaching of adventure lessons. Interviews sought to examine the impact of TP on their understandings of and commitment to teaching adventure, knowledge on the role of planning for teaching, decisions on content delivered, challenges encountered during TP, methods used to teach adventure and discrepancies between what was planned and what was taught.

Data Analysis

Understanding the data required repeated and continuous reading of each data source. Through inductive analysis, patterns and themes were identified. Atlas software served to organise data into themes and codes. Triangulation of LPs and SoW, researcher field notes, post-lesson discussion and focus group interview were used as a means of understanding and aligning the data.

FINDINGS

This paper reports the main theme that emerged from each research question.

What PTs planned for when teaching adventure

Influences on planning emerged as the main planning theme for these PTs. PTs chose to teach adventure as a result of discussions with their co-operating teachers (CTs) who suggested it as a good option for 3rd year classes and because many adventure resources were available in the school. During the focus group interview PTs discussed how available resources influenced their decisions on what content they planned as did the JCPE syllabus and activities they experienced in their own coursework. Most activities PTs chose were those they enjoyed most themselves yet they noted not using resources provided through their own coursework although researcher field notes showed much of the content they delivered was similar to what they had experienced.

...you [Elaine] reminded me of the rucksack game, I wouldn't have thought of that at all...but then it worked really well it took up a good 20 minutes in class and the students enjoyed it and like you know...I'm just thinking now...another game could be applied or even if we had a list of them...you know...we probably do in our first year folder but I mean you know...that's at home in the attic somewhere. (Claire)

Elaine and Claire commented on the influence of their achieving a TP grade as important in planning their SoW and LPs. Analysis of SoW revealed that their two PTs SoWs were almost identical with shared aims, objectives, equipment requirements, assessments and lesson content details. PTs spoke of using the same orienteering LP; although they noted the classes were quite different in terms of behaviour and size. Both emphasised that LPs are TP requirement and important for receiving a TP grade as opposed to facilitating teaching for student learning.

Elaine: ...you know when you plan a lesson like...well, you plan a lesson and where you're writing a lesson you kind of ...you're writing stuff and you're probably thinking God that won't happen, you just put it on paper.

Claire: You still put it down on paper, on file, you know you need to have it covered

Elaine: And that influences people on teaching practice...

What PTs taught as adventure

Teaching strategies emerged as the most prominent theme. Researcher notes revealed that Elaine and Claire chose different methods of delivering content; Claire chose to use demonstration during task introduction and Elaine chose to provide a brief introduction without the use of demonstration. Claire espoused discovery learning yet her teaching practice allowed little opportunity for discovery as researcher field notes showed Claire demonstrating solutions to problems posed to her students. During the focus group interview Claire discussed the importance of her always being in control, seemingly unaware of how this impacted student opportunities to discover.

I demonstrated because I kind of like to be structured and like you know...I like to know what they are doing. If I didn't demonstrate it still would have been effective because it would have enabled them to discover their own method of getting across the river... So it still would have been effective and like ...you know looking back I suppose at the different tasks I mightn't demonstrate them ... 'ok you've got two mats, you've got six people to get across'...and let them do it... I just didn't in that case. (Claire)

Elaine also believed it was important to allow students to 'discover', problem solve, and learn for themselves, choosing to brief them on the problem to solve without giving them the answers through demonstration or procedures.

I suppose it makes them think a bit more. It makes them a bit more independent of you...and then you're not always giving them the answer...and maybe like if they come up with different ways they have

more satisfaction...and then they're more willing to try the next activity by themselves

Challenges faced by PTs when teaching adventure

The most prominent theme evident that challenged these PTs was student participation and resistance, or how PTs thought things might be perceived by students.

Student behaviour

During the focus group interview PTs suggested a concern for 'keeping students busy' and not having enough planned to keep the class focused for the full lesson. They both spoke about 'filling time' regardless of whether it aligned with learning in adventure or with their own understandings of adventure.

Claire: ... you're like 'oh my God I have to get them doing something'

Elaine: 'Cause if you lose them at any stage...well like...the problem with a short class anyway...you can lose them at any stage

Claire: Yeah sure we had to play dodge ball at the end of one of the classes

Elaine: Yeah

Claire: 'Cause they just wouldn't do the games. That was actually at the end of the second cooperative games lesson. They wouldn't play the games so I mean Jane [CT] was ok we can play dodge ball they need to work as a team

Elaine: Yeah, 'cause she was like in fairness with this kind of class any kind of a game becomes a cooperation game because...

Claire: Yeah

Elaine: They don't cooperate at anything, so anything will help develop...

Claire: Yeah it's true, and then they start firing balls and everything, it was a disaster ...but sure...it passed the time (Elaine and Claire)

Elaine talked about her concern with keeping all students active which she felt unable to do when 'facilitating' a lesson.

When I was doing 'Human Knot' with them and there were two different groups...one of the groups were nearly finished and the other group were still only getting started...I felt like this urge to go in and say 'Do this, do this, quick catch up with them, come on, cause we have to move on to the next one'...but you probably shouldn't and you should leave them off...but then you have the whole thing of what to do with the other group then...do you just tell them to just do it again...that's hard...that's what's so hard about being a facilitator. (Elaine)

Similarly, Claire indicated that student misbehaviour prevented her from being an effective facilitator.

I think like when for the adventure lessons I was a bit teachery in the sense that you know I did ...kind o...talk about getting stuff like that,

like I could've had more of a facilitator role by stepping back a little bit more...am...but because of the class I needed to talk...cause if I didn't they would have done nothing. (Claire)

PTs perceptions of student behaviour impacted their decisions on content they taught. They indicated, for example that student resistance prevented them from integrating a FVC. Claire suggested a FVC was only suitable for better behaved classes, and did not see it as a tool to aid behaviour management, goal setting, or teaching responsibility.

My class probably wouldn't take it serious but if it was a good class they'd probably take it more serious then...and want to achieve it. (Claire)

Elaine believed the FVC was a 'lovely idea' but not realistic to use in a school setting.

They might think it's a bit immature or something...so then they mightn't do anything...so, if it was a more mature way they might take it more seriously. (Elaine)

Elaine also indicated that she did not enjoy, or see the point of creating a FVC when she experienced it during her own teacher education and thus chose not to use it during TP. Claire noted that while some of her students would benefit from the FVC other students who have a strong influence would sabotage it for everyone.

Even if one or two of my class would have...or a few of them would have enjoyed doing it and would have [been] 'oh yeah let's achieve that' but then they wouldn't of due to the opinions of the others. (Claire)

Claire and Elaine discussed experiencing many difficulties in supporting students' learning through the debriefing process.

...I tried questioning and stuff but sure to be honest none of them had much interest in answering...I always had to spoon feed them like 'What skills did you develop? And why?' and they'd be just like 'cause we communicated with each other', d'you know they were very simple answers and they weren't deep reflections at all but I mean I made an attempt but it wasn't very successful. (Claire)

I did think about the way that I...well as in the way that I was talking to them and how I was questioning them and I think I was better the second day...but, I wouldn't do any deep reflection where I thought 'Oh my God I'm totally going to change this in a whole new approach'... it was a case of just surviving. (Elaine)

During the interview PTs shared difficulties getting students to discuss what they learned and its significance. Claire resorted to framing questions so students wouldn't have to think and just respond with a one word answer e.g. 'communication' or 'co-operation'. While this type of response was not in line with the purpose of a

debriefing or reflection, the ELC was the only adventure principle for which PTs could identify issues and concerns.

DISCUSSION AND CONCLUSION

Feiman-Nemser (1983) suggests that what is known about learning to teach does not 'fit' with teacher education practices citing that informal influences have more impact on teachers as they learn to teach. She argues for teacher educators to change what they do and how they think about learning to teach. Cochran-Smith (2005) and Feiman-Nemser (2008) highlight the need to understand what PTs learn during teacher education and how they use this knowledge when teaching. This study sought to understand how PTs use knowledge gained during teacher education by identifying what these PTs planned for and in turn taught as adventure while highlighting challenges they faced when teaching during their first teaching practice experience. There were many influences that impacted these PTs planning, one being availability of resources in their school. Findings suggested that PTs did not use resource materials provided through teacher education which included 'A Handbook of Ideas: Teaching Adventure Education' (Tannehill and Dillon, 2007), and that instead they chose only to use resources available through school. It is important to note however that Claire discussed not using resources gained through teacher education as these were in the 'attic'. TP requirements and earning a 'good' grade was a major influence in how PTs created and presented LPs as opposed to designing lessons to guide teaching that would facilitate learning. It was also noted that what these PTs planned for was not necessarily what they taught, making it unclear what role planning played for them. Based on these findings, it would be reasonable to assume that the PTs did not focus on student learning. If PTs did not use LPs as a means of planning for learning can it also be assumed they did not plan for the lesson at all? This raises the question of how and what do PTs plan for when teaching?

With knowledge of what PTs experienced when learning to teach adventure, researcher observation suggested PTs used many of the activities experienced but did not incorporate most of the 'key' principles and elements of adventure education which they 'lived', such as FVC, CwC, and debriefing. This contradicts Oslin, Collier and Mitchells (2001) findings who argued that PTs taught with a better understanding when they have 'lived the curriculum'.

Lack of a complete picture of what PTs intended to teach makes it difficult to make sense of what they actually taught as adventure education.

Choice of teaching strategies impacted what was taught as adventure, and caused the researcher to question whether what was taught was, in fact adventure education, or merely adventure activities. PTs integrated strategies such as demonstration and competition as a means to maintain control yet were not consistent with the problem solving and experiential nature of adventure. On reflection, PTs recognized the misalignment of the strategies used and the impact these had on the adventure experience yet this contradiction was not a concern for them as long as the students were actively involved which supports the notion that PTs were more concerned with their own survival than student learning.

PTs were challenged by their perception of potential student resistance in their decision to not integrate a FVC into their scheme. However, it became evident that both PTs misunderstood the aim and role of a FVC as well as other adventure education principles. It is important for us to better understand PTs interpretation of

adventure education philosophy and practice as we examine their rationale for inclusion and exclusion of these components.

Both Claire and Elaine struggled with the process of debriefing the experience with students. They did not seem to understand their role in guiding and helping students to achieve learning through debriefing/processing the activity. Instead they 'blamed' students for not doing "deep reflections" of the experience. As PTs omitted processing questions and strategies from LPs it is unclear what they intended to achieve through debriefing. Claire chose to ask students to write words in response to questions during the debriefing although she never followed up on their responses. This made it difficult to understand what Claire hoped they would learn through this exercise, or the lesson yet she shared delight that students actually wrote something down suggesting an emphasis on student participation as opposed to learning. Elaine recognised that students were not learning through processing yet chose not to help them to improve or learn more; 'making an attempt was enough' and she should not be expected to 'do it right'. This supports Rovengo's (2000) findings where PTs resorted to a 'curricular zone of comfort' when challenged by student resistance, with the focus being keeping students active as opposed to learning.

Without more complete detail on PTs planning decisions we do not know why these PTs did what they did. It is unclear if these pre-service teachers were focused on themselves or if they wanted their students to learn, as they appeared to be focused on their own survival. Were these PTs unable to help their students learn or were they not motivated enough to guide students in their learning? Gaining an understanding of the PTs decisions and actions, the role planning had for them, what they plan for and what influences this planning, interpretations of what they are teaching, what they hope to achieve and how, what challenges they face and how they deal with them is crucial. This knowledge would help identify the relationship between the PTs decisions and actions; thus providing a valuable contribution to how and why PTs use what they learn in the classroom and in turn inform current teacher education practices.

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THE MOTIVATION OF STUDENTS AT A SCOTTISH HIGH SCHOOL TO PARTICIPATE IN PHYSICAL EDUCATION

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Key Words: Physical Education, Gender, Self-Determination Theory

INTRODUCTION/PURPOSE:

Physical education uses or employs what modern society recognises as sport and other similar activities to deliver curricular content that requires students to be physically active. However, not all students are committed to participate. Disengaging, they sit away from the activity, forgetting their kit or producing a note for the teacher requesting no activity. The issue of non participation in physical education was formally recognised at national government level in Scotland (Scottish Executive, 2004) where the Ministerial Review Group recommended that schools be supported in improving the quality of student experience in physical education so that current levels of participation would be increased. This study in one Scottish high school formed the first part of a wider schedule of research aimed at understanding and creating autonomy supportive environments in physical education and as such had a clear strategic purpose to quantify students' levels of self-determination in relation to their participation in physical education.

BACKGROUND:

Vallerand (2001) suggests that fundamentally there are two types of motivated behaviour, intrinsic and extrinsic. The former is where an individual does something for its own purposes, when the fun and satisfaction are gained from the participation itself. This would be exemplified in a physical education context when a student takes part in a gymnastics lesson because he or she feels like they are playing. The enjoyment from performing gymnastics is responsible for their participation. Longevity in sustaining participation in the physical domain is more likely when intrinsic motivation is present within individuals (Dishman, 1987; Ingledew, Markland & Medley, 1998; McAuley, Wraith & Duncan, 1991; Wankel, 1993).

Conversely, extrinsic motivation is where an individual does something for purposes other than solely for participating. Taking part occurs as a result of the influence of an external factor or factors (Ntoumanis, Pensgaard, Martin, & Pipe, 2004). Exemplification in a physical education context would be when another student takes part in the same gymnastics lesson because he or she wants the teacher to praise them for their performance. Teacher approval is responsible for their participation. Initially motivation is likely to have its genesis in extrinsic factors (Ingledew, et al., 1998) and even committed exercisers are motivated by some extrinsic factors (Markland, Ingledew, Hardy, & Grant, 1992).

Amotivation, a third type of motivated behaviour also exists (Deci & Ryan, 1985). This is when an individual possesses a complete lack of motivation where neither (perceived) intrinsic nor extrinsic reasons exist for the individual to engage in the activity (Vallerand, 2001). Physical education teachers would recognise amotivation in a student who does not want to participate in physical education because they see it as pointless.

There are many motivation theories (Roberts, 2001). Contemporary motivational research in sport has witnessed the emergence of self-determination theory (Kingston, Harwood, & Spray, 2006). Self-determination theory maintains that an individual's level of self-determination is created by the meeting of three innate psychological needs described as autonomy, competence and relatedness. The competence need suggests that an individual desires to interact effectively with their surroundings, looking to achieve valued outcomes and experience mastery (Harter, 1978; White, 1959). In this way schools are able to foster competence by improving students' technique and overall skill level in physical education. The autonomy need relates to an individual's wish to be self-initiating in the regulation of their actions (Vallerand & Losier, 1999), with the desire to feel there is common ground between an activity and what an individual values (Deci & Ryan, 2000). Thus schools are able to create conditions to facilitate autonomy by having an element of student choice within their curricular provision for physical education. The need for relatedness refers to an individual wanting to feel connected with significant others (Ryan & Deci, 2000). Accordingly schools are able to manage physical education in such a way where the need for reciprocal close relationships is catered for by having classes that contain students' social groups. Thus students select activities in physical education with their friends and over time the experiences shared in class make these relationships even stronger. Self-determination theory can be used as a vehicle to understand motivation in physical education (Taylor & Ntoumanis, 2007). Importantly the theory recognises that human motivation is constructed by sub-dimensions, also known as behavioural regulations (Mullan, Markland, & Ingledew, 1997; Markland & Tobin, 2004; Hein & Hagger, 2007). These sit on a continuum where the amount of autonomy defines each regulation's location. (See FIGURE 1).

FIGURE 1

The Continuum of Self-Determination and Different Types of Motivation (Biddle & Mutrie, 2008)

Amotivation	Extrinsic Motivation				Intrinsic Motivation
	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	
Negative	←←←←←	←	←	→	→→→→→
Positive					

In a physical education environment, students who take part because the teacher tells them to are externally regulated. Their behaviour is controlled by external sources (Deci & Ryan, 1985). When a student participates in physical education because he or she feels guilty, they are behaving in this way to avoid negative feelings and are displaying introjected regulation (Deci & Ryan, 2000). Students who gauge the worth of physical education to be important show identified regulation and as a result are beginning to display autonomy and thus make a conscious decision to participate (Deci, Vallerand, Pelletier, & Ryan, 1991). When a student takes part in physical education because they see themselves as being sporty, this meets the conditions for integrated regulation (Vallerand, 2001). The student is behaving to satisfy important personal goals that are symbolic of their self-identity.

An individual is fully self-determined when they are intrinsically motivated (Kingston, Harwood et al., 2006).

RELATED RESEARCH QUESTIONS:

The Study had three related but independent research questions.

1. To determine if the established ordered pattern of inter-relationships shown by the Self-Determination Theory continuum is evident in a Scottish context?
2. Are there differences in student levels of self-determination by gender and by choice of Standard Grade* Physical Education?
3. Is there an association between gender and the selection of physical education at Standard Grade*?

*Reader's note: in Scotland Standard Grade is the equivalent of GCSE in England.

METHODOLOGY:

The school is a mixed gender, state funded, integrated community school. It is located in an urban area close to Glasgow and has a population of 1771 students. All procedures were approved by the University of Strathclyde Ethics Committee. Participants provided informed consent and personal consent prior to participation. Written permission was also obtained from the Local Education Authority. The participants in the research were the third year cohort in the school made up of both genders with an age range from 14 to 15 inclusive. 268 students took part in the study.

Data Collection:

The method employed a cross-sectional survey design with participants completing a 21 item questionnaire online. The Behavioural Regulation in Exercise Questionnaire (Mullan, et al., 1997) was modified for use in a physical education setting (BREQ-2; Hein & Hagger, 2007) to quantify the range of participants' motivated behaviour. There were two additional questions. One relating to gender and one asking if students had opted for Standard Grade Physical Education (SGPE). The questionnaire was made accessible for students through specialist software called Survey Monkey via a web link set up by the chief researcher. The opening page stated that by completing the questionnaire the University of Strathclyde would get a better understanding of what students thought of physical education. The page also informed students to read each statement carefully, that there were no right or wrong answers, that they should try to answer truthfully, that they should click on one response from the five given, and that they should provide an answer for each statement.

Cronbach's alpha (α) is suggested as one way of estimating the reliability of psychometric questionnaires (Nunnally, 1978). Questionnaires that produce scores of .7 - .8 are viewed as acceptable for internal consistency. Previous research has shown Cronbach's α of BREQ 2 subscales to exceed .75 (Wilson & Rodgers, 2004; Markland & Ingledew, 2007).

Data Analysis:

Responses were made on a five point Likert scale with scores ranging from 0 to 4. Piloting of the questionnaire had indicated some accuracy issues for students using Mullen, Markland and Ingledew's original three phrases/five point numerical scale. Personal communication with Markland on 22 February, 2009 resolved this and the following Likert scale with numerical values was subsequently adopted for use; not at all true for me (0), slightly true for me (1), about halfway true for me (2), mostly true for me (3) and completely true for me (4).

The responses were analysed following advice (Hein & Hagger, 2007; Guay, Mageau, & Vallerand, 2003) using a Relative Autonomy Index (RAI) (Vallerand & Ratelle,

2002). This provided an overall index for each participant's level of motivation to participate in physical education classes. The RAI was calculated by multiplying participants' mean scores in each behavioural regulation by a predetermined weighting factor (Markland, 2009) and then adding the five behaviour regulation scores together. Each behavioural regulation had four questionnaire items apart from introjected regulation which had three. There are no items for integrated regulation on this version of the questionnaire. This is explained by the difficulty of distinguishing empirically between integrated and identified regulation and also between integrated regulation and intrinsic regulation (Markland, 2009). The Statistical Package for Social Sciences 17 (SPSS) software was used for all aspects of data analysis.

FINDINGS:

Findings are presented for each of the research questions highlighted above.

Inter-Relationships of Self-Determination Theory in a Scottish Context.

For each of the five behavioural regulation responses, descriptive statistics were calculated. These are summarised in Table 1.

Table 1 Descriptive Statistics for Behaviour Regulations

	Mean	Standard Deviation	Skewness	Kurtosis
Amotivation	0.97	1.21	0.40	1.21
External Regulation	0.53	0.68	1.76	3.80
Introjected Regulation	0.62	0.89	1.77	2.83
Identified Regulation	1.72	1.11	0.14	-0.98
Intrinsic Motivation	2.01	1.28	-0.12	-1.19

All data were relatively normally distributed with skewness and kurtosis $< |2.00|$. The only exceptions were external regulation and introjected regulation which were both slightly kurtotic. The range of values possible was between 0 and 4.

Correlations were calculated between each of the five behavioural regulation responses to check the assumption of a continuum of ordered variations in self-determination. These are shown in Table 2.

Table 2 Correlations of Behaviour Regulations

	Amotivation	External Regulation	Introjected Regulation	Identified Regulation	Intrinsic Motivation
Amotivation	1.0				
External Regulation	0.31 ***	1.0			
Introjected Regulation	-0.32 ***	0.18 **	1.0		
Identified Regulation	-0.68 ***	-0.13 *	0.58 ***	1.0	
Intrinsic Motivation	-0.73 ***	-0.20 ***	0.43 ***	0.82 ***	1.0

***Correlation is significant at the 0.001 level (2-tailed)

** Correlation is significant at the 0.01 Level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

In terms of how each sub-scale item co-related, analysis indicated that this was mostly as had been previously found (Mullan, et al., 1997; Markland & Tobin, 2004; Hein & Hagger, 2007). For example there was moderate positive correlation between amotivation and external regulation (0.31) and with negative values between amotivation and intrinsic motivation (-0.73).

It was also possible to see an order of self-determination; for example the bottom row of Table 2 shows (reading left to right as you move along the Self-Determination continuum) an increase from a negative score (-0.73) to a smaller negative score (-0.20), to a positive score (0.43) to a larger positive score (0.82). To explore the strengths of the relationships between BREQ-2 sub-scales, Pearson's correlations were used.

Differences in Self-Determination by Gender and by Choice of SGPE.

A two (boys/girls) by two (opted for SGPE/did not opt for SGPE) between groups ANOVA showed two main effects and no interaction; $F(1,264) = 1.856, p = .174, \eta^2 = .007$. The independent variables were gender and opted/did not opt for SGPE. The dependent variable was RAI Score. The significance level was set at $p < .05$.

The first main effect was gender on RAI Score ($t(253.16) = 7.721, p < .001$). Male pupils had a significantly higher RAI score (mean = 8.84; SD = 7.04; skewness = -0.88; kurtosis = 0.32) than female pupils (mean = 1.23; SD = 8.99; skewness = -0.13; kurtosis = -1.07). These results are illustrated in Figure 2.

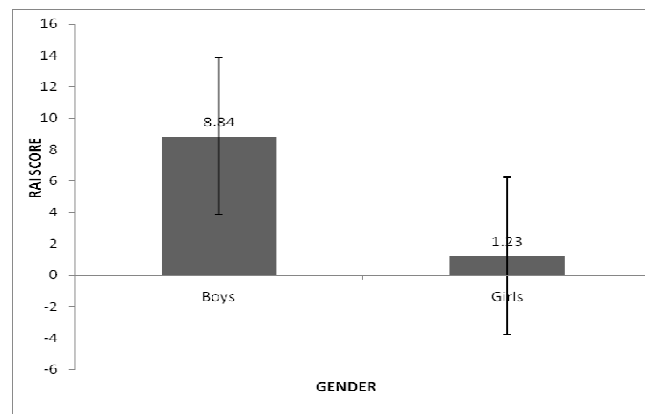


Figure 2 Gender and RAI Score

The second main effect was choice of SGPE on RAI Score ($t(256.89) = 12.769, p < .001$). Students who opted for SGPE had a significantly higher RAI score (mean = 11.61; SD = 4.80; skewness = -0.68; kurtosis = -0.21) than those who did not (mean = 1.20; SD = 8.53; skewness = -0.14; kurtosis = -0.95). These results are illustrated in Figure 3.

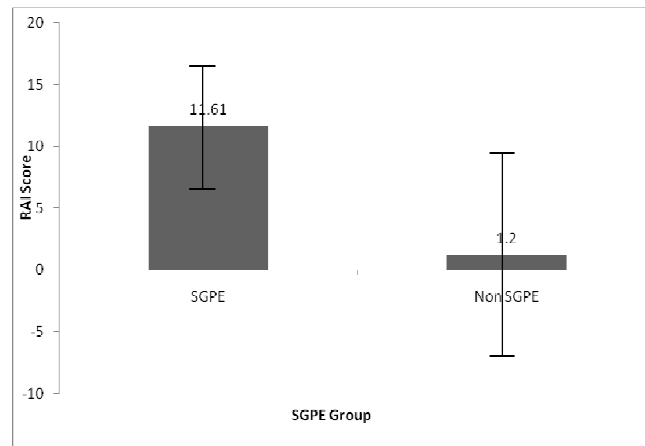


Figure 3 SGPE GROUP and RAI Score

Association between Gender and the Selection of SGPE

Students were asked whether they had opted for SGPE and responses were analysed by gender. A Chi Square (χ^2) test for independence ($\chi^2 (1) = 38.203$, $p < .001$) demonstrated a significant association between gender and the likelihood of students taking SGPE. The significance level was set at $p < 0.05$. Almost three times as many boys ($n=73$) chose SGPE in comparison to girls ($n=25$). Table 3 shows these results.

Table 3 Selection of SGPE by Gender

Do you take SGPE at your school?		
Male	Yes = 73 (55%)	No = 60 (45%)
Female	Yes = 25 (19%)	No = 110 (81%)

DISCUSSION:

Findings in this study in relation to the confirmation of the ordered pattern of inter-relationships shown by the Self-Determination Theory Continuum concurred with previous research in the sport and exercise domain (Chatzisarantis, Hagger, Biddle, Smith, & Wang, 2003; Mullan, Markland, & Ingledew, 1997). The pattern of inter-relationships was an ordered one. Thus indicating that a motivational continuum (based on levels of autonomy) existed in contrast to a clear division between two very different types of motivation.

In this study gender was a factor in RAI score shown by the significant difference in mean RAI scores between male and female students. This indicated that female students were more inclined to participate in physical education because they were told to, or because they had feelings of guilt if they did not or they may have suffered from a complete lack of motivated behaviour because they saw physical education as having no purpose. Amotivation, extrinsic regulation and introjected regulation are regarded as controlling forms of behavioural regulation (Vallerand, 2001).

In this study students who opted for SGPE (both male and female), in comparison to those who did not, had higher RAI scores which indicated that they valued physical education and saw it as useful to them as individuals. Taking part was personally important. These same students also participated as a result of the fun and value they

placed on the activities themselves. Identified regulation and intrinsic motivation are typically viewed as autonomous forms of behavioural regulation (Hein & Hagger, 2007). These findings concurred with previous research (Taylor & Ntoumanis, 2007) who found that male and female students' motivation was linked to taking part in optional physical education provision.

The findings in this study were consistent with previous literature on research into gender and school-subject preferences. (Colley & Comber, 2003; Colley, Comber, & Hargreaves, 1994; Stables, 1990; Stables & Wikeley, 1997) who found that physical education was ranked significantly higher by boys than by girls. The types of activities on offer in physical education contributed to a poor or irrelevant overall experience for female high school students (Flintoff & Scraton, 2005). In support of this Luke & Sinclair, (1991) found that female students who did not opt for the subject emphasised that the type of activity on offer was a crucial determining factor in the decision they made. A consideration of the activities that made up the optional SGPE course in this high school showed an emphasis on sport and in particular on major team games including basketball, volleyball and field hockey. It is possible that this stereotypically masculine view of physical education (Kirk, 2002) proved to be unattractive to both a large group of female students and a smaller group of male students in the research cohort.

IMPLICATIONS AND RECOMMENDATIONS:

This study identifies that the Behavioural Regulation in Exercise Questionnaire 2 supports the inter-relationships between Self-Determination Theory's multi-dimensional view of motivation and thus works in Scotland as it does elsewhere. The study also identifies that in this school there are differences in students' levels of self-determination by gender and by choice of SGPE. Finally the study identifies that in this school more boys than girls select physical education at Standard Grade.

The recommendation is to use the results of this study as a basis to form student focus groups from within the cohort of participants in order to gain further insight into the students' physical education experiences.

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THE CONDITIONS FOR CREATING AND MAINTAINING A COMMUNITY OF PRACTICE

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Keywords: Professional Development; Communities of Practice

INTRODUCTION:

Physical education teachers are often marginalized, rarely provided with substantive professional development, and plagued by lack of support. Yet, “descriptions of solid programs and skilled teachers in physical education” (Bulger & Housner, 2009, p. 443) have been identified. While striving to create quality programs, teachers often seek the aid and assistance of university professors and professional development facilitators. Thus for teacher educators a quandary of sorts exists in the constant quest for the most effective ways to help teachers help kids. The question then is ... how to empower teachers to empower students?

BACKGROUND AND THEORETICAL FRAMEWORK:

Situated learning provides a powerful framework for examining teacher learning within communities of practice (COP). In short, situated learning reflects the social and situated nature of learning. It assumes that knowledge is inseparable from the contexts and the activities in which it is developed. Communities of practice have been recognized as one way to facilitate situated learning. Kirk and MacDonald (1998) refer to a COP as “any collectivity or group who together contribute to shared or public practices in a particular sphere of life” (p.380). While the term COP is becoming quite commonplace in the literature and is often used casually to describe groups of teachers working together, it should be recognized that COPs are not haphazard groups working to accomplish a task. Instead, they are meaningful, purposeful, and revolve around authentic tasks. They share an area of interest, pursue that interest and thus socially interact with each other, and as a result develop a unique and somewhat personal set of resources and experiences (Wenger, 2007). Therefore, the study of COPs is worthwhile in understanding alternative formats for teacher professional development.

PURPOSE/RELATED RESEARCH QUESTIONS:

The purpose of this study was to examine the development and maintenance of a community of practice of physical education teachers. The research question that guided the study was: What conditions were necessary to develop and maintain this community of practice?

METHODOLOGY:

Participants: This COP was comprised of four elementary physical education teachers, all female, with no experience in curriculum development, yet charged with task of developing curriculum. Three were K-5 teachers (Kelley, Lesley, and Taryn) and one was an adapted physical education specialist (Nora). They ranged in age from 27 to 56 and in teaching experience from 5-30 years. All participants knew each other in a variety of ways, but no one knew everyone both personally and

professionally. Additionally, there were three project facilitators (Martha, Keith, and Claudia), all university faculty members and participant observers, one of whom was the lead facilitator.

Context: These teachers worked in a medium-sized district in the United States. At the time of this study, the district was in turmoil. It was on probation by the state for not making adequate yearly progress on state mandated achievement tests. There was a change in administration that was perceived as authoritarian: principals were moved, recess eliminated, teachers dismissed, elementary physical education reduced to once every third day, and the district physical education coordinator fired and not replaced. The teachers in the district were demoralized and physical education more marginalized than ever. The atmosphere was tense and volatile. Yet, as a result of a three-year grant to improve physical education, a community of practice was formed to write curriculum.

The group had been functioning as a part of the grant for 18 months. At the time of this study, their focus shifted to curriculum development and they maintained that focus for the next two years. While the facilitators had been engaged with all aspects of the grant, the teachers explicitly asked for their assistance when it came to curriculum development. The lead facilitator and one teacher negotiated the role of the facilitators to provide content knowledge while focusing their work as they recognized their propensity to be distracted.

Data Sources: Data sources included two structured interviews with each of the teachers and the lead facilitator and multiple informal interviews accompanied by field notes from observations at a three-day mountain retreat and 11 follow-up curriculum meetings. In addition, artifacts ranging from the documents produced to emails and voice mails to the post-it notes from the walls of the meetings were collected. Data collection spanned a 24-month period.

Data Analysis: Interview responses were analyzed using two distinct yet overlapping processes of analysis derived from a grounded theoretical perspective: open and axial coding (Corbin & Strauss, 2008). Open coding was used to analyze interview transcripts by reviewing each multiple times and making notes about their possible meaning. In the axial coding phase, the goal was to systematically develop and relate categories. Trustworthiness of the data was established utilizing two separate techniques. First, a researcher journal was kept to document personal reflections, methodological decisions, questions raised, theoretical propositions, and evolving perceptions of the study. Second, triangulation—using multiple investigators and multiple sources of data was utilized to confirm the findings (Merriam, 2009).

FINDINGS:

Analysis resulted in the identification of five themes that contributed to the development and maintenance of a COP for this group. These were: a) vision, b) reciprocal interactions, c) affect, d) environment, and e) a culture of empowerment. Collectively, these results tell a story of how one group of dedicated teachers formed a COP that navigated a volatile work environment and successfully created district curriculum.

Vision

From the beginning this curriculum development project was guided by vision. The

initial vision was to create a curriculum that would be used by elementary physical educators and meet administrative requests for an aligned curriculum. However, this vision was ill-defined and at the outset unrealistic. In fact, the teachers had hoped in four days (the initial work session), *“to develop all benchmarks, all performance indicators, and assessment items and get to report cards before we finished...”* (Kelley).

Yet, while the vision was initially rather blurred, with time it matured and took shape, gradually advancing to writing curriculum that would do what was *“best for kids.”* This eventual vision could be summarized through Lesley’s words as,

Trying to help create and develop K-5 curriculum that has sequentialness all through the grade levels and progressions that will get kids where we want them to be. That would give us a more specific sense of what we wanted our kids to look like and accomplish and give our PE program direction.

Reciprocal Interactions

Reciprocal interactions can be defined as any interaction that demonstrates and influences a mutual relationship supporting the purpose of the group (Glazer & Hannafin, 2006). While many factors impact reciprocal interactions, the result is a group taking responsibility for each other’s learning and development. Support is a mutual responsibility and members of the group interact reciprocally with the intent of developing a common understanding that is distributed throughout the group. For this group, reciprocal interactions represented a shift from the traditional passive transmission of knowledge to something that was new and exciting. Again Lesley comments,

We’ve worked in our small groups and brainstormed on our own and then brought that information together and shared out and listened to each other, honoring each other. I think that we’ve had fun doing it. It hasn’t been torture; we want to be there. It’s not something we go “oh man”, like when I think of my Monday staff meetings; it’s something I look forward to doing. I look forward to being with those people and brainstorming with them.

Initially these reciprocal interactions allowed for the development of professional relationships between the teachers and facilitators. Eventually these interactions and relationships moved beyond strictly professional to personal. As Nora indicated,

... we had a professional relationship between the people on the committee... then through our work together I think our personal relationships also grew. We became more than just acquaintances and colleagues. I truly think we would count each other as friends.

Taryn acknowledged that it was the strength and reciprocal nature of these interactions and subsequent relationships that supported the group’s efforts,

They [university facilitators] take from me too. They ask to come to my class. Then it’s even going on a personal level, like getting to come to Keith’s going away party. I feel very included. At the same time I feel like I can go back to being a student and get their help. Yet, I am not a student; I’m a colleague in

our profession with them and a friend.

Affect

The third factor that influenced the development and maintenance of this community of practice was affect. Affect, described as a sense of being that permeated the group, influenced the nature of all actions and interactions. There was an overwhelming sense of positiveness and trust that kept the group productive. Kelley described this dynamic when she stated,

There is a great deal of trust. Like I already said, 'I don't feel like I have to do it all and that was huge. We all know now that none of us are experts at everything. We've let that guard down of who we are; we all bring something.'

The members recognized the connection and what it allowed them to do. Lesley echoed, *"We've had this bond and we have this connection and we all have the passion and we all want the same outcome. That's what allowed us to work through the challenging environments to accomplish our goals."*

These personal relationships among the teachers grew as the project developed. Informal conversations often occurred allowing teachers to share recent personal news and stories. While not related to the curriculum development process, these conversations provided opportunities for the development of friendships that were valued and ultimately strengthened the group's efforts. Taryn explained,

Through the process I became very personal with all of them [other teachers], they're my girls; all were at my wedding. That says it all right there. I had all three of my ladies, Kelley, Lesley, and Nora; it almost made me cry because I have gone through so much with them this last year...we got ourselves into so much work and to have them there was really meaningful.

While much of this group's work was "like-minded" it would be remiss if we reported that all discussions concluded with agreement. However, the sense of affect that permeated the group allowed them early on to learn that they had to agree to disagree. Nora explains,

I just think that we all have certain areas that we're real passionate about and that came out in some of our discussions. It may be that we're not willing to compromise on those areas that we feel real passionate about, but eventually we do. I think the respect we all have for each other gets us through it. We are able to come even if we agree to disagree, we still agree and we're able to move on. I think that works well for us.

Environment

The fourth factor, which had an impact on the development and maintenance of this COP, was environment. Environment in this setting described the physical, temporal, spatial, and human resources available to the group. First, because few of the teachers had experience with curriculum development, physical resources such as books, sample curriculum guides, and computers were important to the overall success of the group. Second, human resources were needed to provide a combination of expertise, direction, and financial support. These teachers relied heavily on university and administrative support and encouragement.

Yet, in addition to physical and human resources, teachers expressed a need for an environment conducive to a productive work environment. Two aspects of the environment clearly stood out: temporal resources and spatial environment. First, Lesley expressed the need for temporal resources. This time, specifically time to interact, provided teachers with the proximal interactions required to successfully write curriculum. Lesley noted,

We had a couple of meetings Mondays or Thursday nights. It would be a two hour block of time and so we were able to get things done, but sometimes it was a challenge after coming from work all day getting the brains going. By the time you get tuned up it takes a half hour to get into that groove, versus some of our four hour times over last summer where we had time to really delve into things.

Second, the teachers expressed their need for spatial resources. This need for a pleasing and productive spatial environment was expressed by Lesley who identified that for the community, the most productive work spaces were those that provided for a non-restrictive workspace which removed them from their daily work sites. One such environment was provided by the summer mountain retreat where the initial curriculum work was done. Lesley explained,

We could be kinesthetic learners, we could move around more. We'd stop and we'd have our therapy balls and we could do what we wanted...So if there is a board room there's not a lot of room...if we wanted to walk and pace I mean (I could). That's just how I can think. If I need to go do lesson plans I go get my bike; I don't sit at my desk. So that was a stumbling block for me. The open atmosphere [at mountain retreat] it allowed me to be more productive.

Culture of Empowerment

Most pervasively there was a culture of empowerment that developed and provided continual impetus to the group. This culture could be described as the collective and individual feeling of empowerment regarding the development of curriculum and its implementation. These teachers felt they were learning and making progress that they could “see” and “feel”. They recognized their learning about curriculum and the curriculum process and could transfer that learning to their own teaching. Taryn described how her involvement in this process would continue to impact her teaching,

It's made me take a look at my own program and how I plan, how I write objectives... I've learned a lot more about progressions and how important that is. When I plan it's in K-1, 2, 3, 4, 5 so I'm thinking fifth grade soccer unit, fourth grade slightly different, and those progressions [for other grades]. I'm not completely there yet and I can't change everything this year but I am working towards that. I'm changing units as I teach them a little bit at a time.

Ultimately, the learning led to these teachers being empowered “by” the project. Learning fueled their confidence and the sense of who they were as teachers. Taryn explained, “A feeling of confidence I guess, this was a long haul of blood, sweat, and tears and a lot of late meeting nights and a lot of debates and a lot of trying.”

The teachers' realization of empowerment went beyond being empowered by curriculum development to being empowered to continue their work and pursue other goals. This was evident in the passion they shared regarding curriculum development, weathering set-backs and professional disagreements, celebrating progress, concocting plans for "selling" their product to the remainder of the teachers, and continued growth. Kelley's voice mail to the lead facilitator as the group was creating a professional learning community for all interested elementary physical education teachers most poignantly reflects their emerging sense of empowerment, the power of relationships, and where it has led them,

It was a success [first meeting of the PCL]. There were 11 people; besides the four of us there were 7 more, so good start. But anyway, thanks for your direction and your support and I don't think you're going to have to worry about us. I think we'll be able to survive. You've created some teachers, which is your job! Love you. I wanted to share a little of the energy; like I'm not feeling like I normally would after a 14 hour day. I feel pretty jazzed up and so it's all good.

DISCUSSION:

The development of curriculum was a meaningful, purposeful, and authentic task around which this COP developed. Many interdependent factors contributed to the development and maintenance of this community, however, the combination of vision, reciprocal interactions, affect, and environment appears to have led to a culture of empowerment that was especially important. While like others (Betchel & O'Sullivan, 2007; Doutis & Ward, 1999), vision appears to be the starting point and empowerment a result; reciprocal interactions, affect, and environment seem interwoven in the middle and in our eyes a bit of a muddy mess.

The teachers and community of practice examined in this study were driven by a desire to revise their district elementary curriculum. Ultimately, the conditions for creating and maintaining this community of practice appear largely intangible. These conditions are not something that were expected or that we can easily put our hands on. It is not like money, you can't dump a lot of trust into a project. Yet, it appears that these intangibles resulted in a sense of empowerment and that this empowerment was self-reinforcing. This lends support to the social and situated nature of learning as well as to Darling-Hammond and Bransford's (2005) suggestion that communities of practice provide for cyclical learning and in essence become regenerative.

IMPLICATIONS AND RECOMMENDATIONS:

In the end, this leaves many unresolved issues. It leads us to question how true communities of practice are created, supported, and maintained. The common mode of delivery for professional development has often been a one-way transmission of knowledge. Yet, these teachers are saying this does not work. Within this group the teachers involved formed an identity defined by curriculum development, pursued their interests and, by doing so, engaged in social interactions. They built relationships that enabled them to learn with and from each other. While this study identifies essential factors necessary in the development and maintenance of this COP, we still have not really investigated how these conditions were created (if they were). In short, there is still more work to be done.

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